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An Investigation into Ghanaian Primary Care Physicians' Beliefs and Their Influence on Clinical Knowledge Translation

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AN INVESTIGATION INTO GHANAIAN PRIMARY CARE PHYSICIANS' BELIEFS
AND THEIR INFLUENCE ON CLINICAL KNOWLEDGE TRANSLATION

by

Linda D. Caples

A Dissertation Submitted in
Partial Fulfillment of the
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May 2019

ABSTRACT

AN INVESTIGATION INTO GHANAIAN PRIMARY CARE PHYSICIANS' BELIEFS AND THEIR INFLUENCE ON CLINICAL KNOWLEDGE TRANSLATION

by

Linda D. Caples

The University of Wisconsin-Milwaukee, 2019
Under the Supervision of Professor Barbara Daley, PhD

There is a disconnect between the use of evidence-based clinical practice guidelines and the medical practice of Ghanaian primary care physicians in the care of hypertensive patients. This study sought to answer the question of how the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation in the management of hypertension in adults. The process of clinical knowledge translation helps physicians construct knowledge along with interactions with other healthcare professionals, their patients, and the communities they serve. These interactions help inform a physician's salient beliefs. Thus, the use of the Theory of Planned Behavior (TPB) facilitated research into how background factors influenced behavioral, normative, and control beliefs and in turn, how those beliefs influenced intentions and ultimately, physician behavior. Findings in the form of six themes illustrate the importance of culture and context in shaping the beliefs of how primary care physicians saw their patients and how they translated clinical knowledge into medical practice.

The background factors such as a physician's gender, medical school training, clinical setting, health sector, specialty, and years in practice had some influence on beliefs. However, the patient population significantly influenced their beliefs particularly their interactions with patients within the culture and context of Ghana. Additionally, clinical knowledge translation is supported using continuing medication education (CME) as a primary channel of knowledge

translation and as a means to educate physicians and other health care professionals about clinical practice guidelines. Incorporating culture and context into the development of CME content is important for effective clinical knowledge translation and improved patient care. This is particularly important in medically pluralistic societies such as Ghana, where primary care physicians are few and traditional medical practitioners are prevalent. Implications of this research may shape policy, future CME content development, and CME research.

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LIST OF ABBREVIATIONS

ACE Inhibitor - angiotensin-converting enzyme inhibitor

AHA – American Heart Association

BP – Blood Pressure

CME – Continuing Medical Education

CT Scan - computerized tomography scan

CPD – Continuing Professional Development

GCPS – Ghana College of Physicians and Surgeons

JNC – Joint National Committee

mmHg - Millimeters of Mercury

NHIS – National Health Insurance Scheme

PCP – Primary Care Physician

TACM – Traditional, Alternative, Complementary Medicine

TPB – Theory of Planned Behavior

WHO – World Health Organization

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Nyansapo – The Wisdom Knot. An ancient Ghanaian hieroglyphic.

The wisdom knot called Nyansapo, is an ancient Ghanaian hieroglyphic. In Ghana, it means "a wise person has the capacity to choose the best means to attain a goal. Being wise implies broad knowledge, learning and experience, and the ability to apply such faculties to practical ends" (MacDonald, 2004, para. 2).

Chapter One: Introduction & Background

The narrative of Sub-Saharan Africa was often that of food insecurity caused by conflicts, environmental factors, gender discrimination, and food aid (Duren, 2015). However, in the coastal West African nation of the Republic of Ghana, the rates of undernourishment and starvation decreased dramatically (Government of Ghana, 2013). The burden of disease shifted from under-nutrition to over-nutrition. Factors contributing to this transition included economic progress from a low to a middle-income country and rapid urbanization in its capital city, Accra and the second largest city, Kumasi.

Excess caloric intake relative to the level of daily activity is complicated with shifts in the composition of the Ghanaian diet. These shifts have moved many in Ghana from what Ofori-Asenso et al. (2016) described as a traditional diet of “complex carbohydrates and fiber to energy-rich foods high in fat and sweeteners” (p.2). The longevity of imported processed foods preserved with sodium (salt) were more prevalent in the diet despite the abundance of free-range chickens, an active fishing industry, and land capable of supporting agriculture. These dietary changes in any society often lead to an increase in obesity rates. Consequently, the rates of the hypertension increase. The Republic of Ghana’s Ministry of Health (2010) defined hypertension in a non-diabetic adult patient as a blood pressure persistently higher than 140/90 mmHg, or a blood pressure persistently higher than 130/80 mmHg in an adult diabetic patient, based on the average of the two or more properly measured blood pressure readings.

The incidence of hypertension in Sub-Saharan African countries, including Ghana, was identified by the Pan-African Society of Cardiology as “the highest area of priority to reduce heart disease and stroke on the continent” (Dzudie et al., 2017, p.1). Hypertension once rare, was estimated to become a leading cause of death in Sub-Saharan Africa by 2020 with mortality rates

as high as 75% (Iwelunmor et al., 2015). The World Health Organization estimates 46% of adults over 25 years old were hypertensive in Africa. Very few African countries had established specific hypertension guidelines and therefore millions within the continent were either untreated or undertreated, leading to stroke and in some cases, death (Dzudie et al., 2017).

Ghana's Ministry of Health (2010) warned that uncontrolled hypertension increased a patient's risk of an early death from a heart attack, heart failure, kidney failure, or stroke. In August 2013, stroke was reported as the fourth leading cause of death in Ghana. By April 2016, stroke became the second leading cause of death in Ghana (Centers for Disease Control and Prevention in Ghana, 2013, 2016). A surveillance study by De-Graft Aikins (2007) in 10 of 12 regions in Ghana reported the 10 leading causes of death for patients in the hospital setting. Hypertension was prominent in 5 of the 10 regions. Stroke followed in 6 of the 10 regions. In 2010, the Republic of Ghana's Ministry of Health issued the 6th edition of the standardized treatment guidelines for all licensed physicians that address several clinical conditions including hypertension and stroke. These guidelines were updated in 2017. When Baatiema et al. (2017) conducted a survey of specialists and primary care physicians at 11 major referral hospitals in Ghana, the study reported that physicians indicated no specific support from the Ministry of Health related to stroke care outside of published guidelines.

Baatiema et al. (2017) further reported that while each hospital in the study had a policy supporting professional development such as continuing medical education (CME), lack of funds prohibited CME policy implementation. This lack of hospital-based CME created a challenge for physicians in those settings as the Ghanaian Medical and Dental Council began requiring physicians to earn 15 CME credits as part of annual medical licensure requirements starting in 2010. The Council suggests CME content areas of focus which included a focus on international

standards of care. Physicians surveyed by Baatiema et al. (2017) reported a lack of stroke related professional development and a lack of stroke related quality improvement programs contributing to the limited practice of international standards of stroke care such as the use of magnetic resonance imaging (MRI), computerized tomography (CT) scans, stroke centers, and speech and occupational therapists.

Hence the lack of operationalized policy/guidelines support coupled with the limited CME caused a clear disconnect between the (a) public health reporting, (b) government deployment of treatment guidelines, (c) increased impact on the population’s health, and (d) insufficient guideline adherence by physicians. Figure 1.1 below illustrates a timeline overview of hypertension and stroke, clinical practice guidelines, and patient outcomes I created based on these findings.

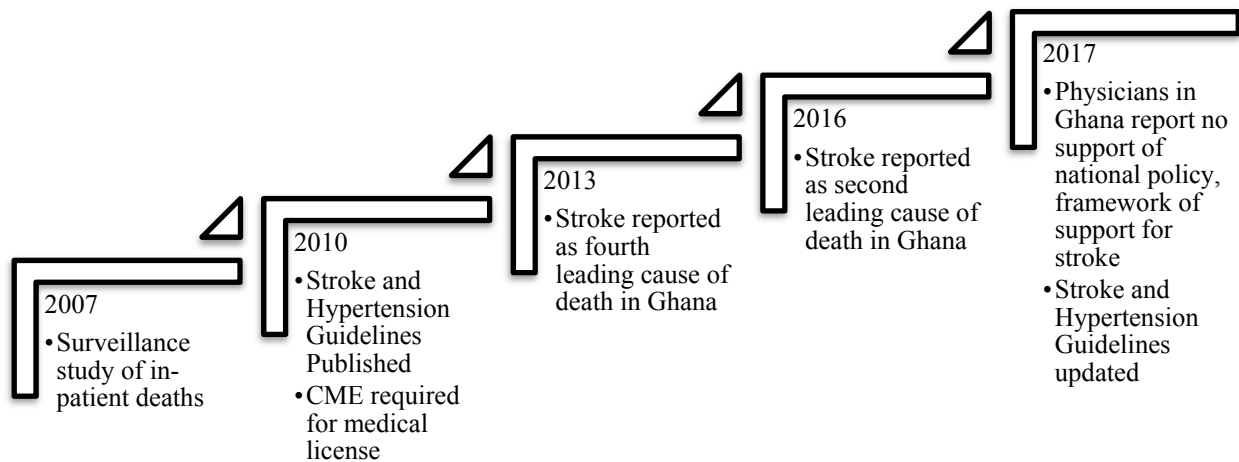


Figure 1.1 Timeline overview of hypertension and stroke, clinical practice guidelines, and patient outcomes

Culture and Context

The culture and context of medical practice and the beliefs surrounding medical practice significantly impact how medical knowledge is applied to practice. Knapp van Bogaert’s (2008) Foucaultian treaty on the 2008 Cholera outbreak in Zimbabwe claims:

In modern societies, doctors are generally responsible for collectively constructing and individually selecting and applying diagnostic labels as part of any society's social structure. It is recognised that the application and communication of some diagnoses have serious and unwelcome consequences for patients, most notably when the medical diagnosis is personally or socially stigmatizing. (p.32)

Therefore, being diagnosed or labeled as hypertensive, diabetic, HIV positive, or any disease, condition, or infection; and the ability to diagnose someone with a disease, condition, or infection carries cultural beliefs that shift over time and impact patient care.

McCormack et al. (2002) illuminate the importance of clinical context in their conceptual analysis of *context* in evidence-based medicine implementation into clinical practice. This analysis delves into the definition of context which is described as “the environment or setting in which people receive health care services, or in the context of getting research evidence into practice” (p.96). Context is shaped by multiple complex factors including resource, economic, political, cultural, financial, and historical realities. Significant variability in clinical context dictate the means in which evidence-based medicine as outlined in clinical practice guidelines, is implemented. McCormack argued that clinical contexts were comprised of multiple systems that at times conflict or complement each other in a dynamic environment (McCormack et al., 2002).

While various clinical contexts may share certain commonalities, each is unique and the factors that influence context act on the clinical environment in different ways and magnitudes. Additionally, culture plays a critical role in the clinical context and any one context can have multiple cultures (McCormack et al., 2002). *Culture* is defined by McCormack as “a paradigm – a way of thinking about or viewing an organization, comprising basic assumptions, values,

artefacts and creations” (p.97). Therefore, the concepts of culture and context need to be taken into consideration when implementing best evidence through clinical practice guidelines or other means.

In a 2010 editorial in the Journal of the American Medical Association (JAMA), McNutt and Livingston presented a stern warning about best evidence as presented in medical research. McNutt and Livingston (2010) argued that generalizing research findings outside of the clinical context specific to the same context of the study was dangerous. Harrison, Graham, Fevers, and van den Hoek (2013) echo a similar sentiment as they claimed that while there were advantages to clinical practice guidelines in terms of their comprehensive use of best evidence, guidelines alone were not adequate. Adoption of best evidence into clinical practice required meaningful and proactive strategy coupled with clinical knowledge translation of the guidelines into the culture and context of each clinical practice setting (Harrison et al., 2013).

Harrison et al. (2013) reported that contextual realities in terms of formal knowledge of clinicians, access to diagnostic tests, medicines, and medical equipment were typically the first considerations as to why some physicians may or may not adhere to guidelines. However, Harrison et al. (2013) go further to argue that best evidence as described in guidelines may not be acceptable to the local patients or clinicians. For example, Aborigo, Allotey, Tindana, Azongo, and Debpuur (2013) in their qualitative study on the cultural imperatives of verbal autopsies in rural Ghana highlight this phenomenon.

The World Health Organization (WHO) recommended verbal autopsies as useful data collection tools in the developing world where many people often die at home. The WHO created the practice guidelines (standardized protocols) around verbal autopsies, however, according to Aborigo et al. (2013) attention to cultural and ethical considerations were not

considered. The practice of verbal autopsies included physicians, field staff, and the families of the deceased. In cultures where mourning was practiced, Aborigo et al. (2013), showed how several cultural issues affect the autopsy process and outcomes.

In Ghanaian communities with mourning practices, speaking about the family's deceased spirit child was forbidden. Depending on how a person died, a family would not talk about the deceased. Some family members refused to participate in verbal autopsies for fear of being blamed for the death or concerns about confidentiality. Furthermore, many physicians and field staff neglected to participate in the appropriate mourning ritual of offering a gift to respect the dead. The WHO guidelines did not take into consideration the appropriate amount of time between a death and the verbal autopsy. Thus, counseling and bereavement support for the emotional distress experienced by families due to their participation in a verbal autopsy was also lacking from the guidelines (Aborigo et al., 2013).

McNutt and Livingston (2010) claim useful evidence from clinical studies is that which refers to a specific context "by more explicitly addressing variations in those clinical contexts that are relevant to individual patients" (p.445). Multiple cultures within a clinical context require attention to human behaviors, not just systems. One example was the surgical culture of medicine. In their qualitative study on the implementation of evidence-based medicine in surgical practice in Australia, Kitto, Petrovic, Gruen, and Smith (2011) claim that the focus in the literature on barriers to change in practice behavior was counterproductive. Kitto et al. (2011) argue the barrier to change perspective did not address the root causes of clinical practice behaviors such as the culture and context of practice. A comprehensive understanding of the culture and context of surgical practice can identify challenges and opportunities to effective implementation of evidence-based medicine (Kitto et al., 2011).

Kitto et al. (2011) further recommend that studies make the descriptions of context explicit for two reasons: (a) to explain the complex factors that support successful practice and (b) how systems or structures relate to one another. In a qualitative study by Peters et al. (2017) entitled, *Examining the Influence of Context and Professional Culture on Clinical Reasoning Through Rhetorical-Narrative Analysis*, the study aimed to determine how physicians engaged in clinical reasoning in the care of severely ill patients. One system of clinical reasoning was identified as intuitive and unconscious (informal knowledge) while the other system was slower and more rational (formal knowledge). Both systems of clinical reasoning were influenced by the clinical context and professional culture in which the physician practices. Peters et al. (2017) used social theories of language to shed light on how physicians understood medical practice and professional culture. In doing so, Peters et al. (2017) described how physicians were influenced by professional culture and context in terms of how they viewed the field of medicine and their work.

How a physician defined themselves as a medical professional was shaped by their role within the clinical community, the tasks they performed, and the values and expectations attributed to the profession of doctor. Like all countries and peoples, Ghana's population including its physicians, is comprised of people of multiple ethnicities and languages which contribute to formal and informal knowledge of its people. In addition to formal knowledge in the development of what it means to be a doctor, informal knowledge such as socialization into the culture of the medical profession through interactions with patients, colleagues, and healthcare administrators influenced physicians as well (Peters et al., 2017). Thus, understanding the culture of medicine contributes to an understanding of physician beliefs within that particular culture.

This formal and informal knowledge as Peters et al. (2017) described influenced what physicians believed to be true about themselves, their patients, and their clinical environment. These beliefs may influence how physicians engage in clinical knowledge translation of guidelines. As stated by Schwartz, Soumerai, and Avorn (1989) more focus needs to be placed on physicians' beliefs if the goal was to replace current clinical practice behaviors with more evidence-based decision-making. Harrison et al. (2013) reported that less attention has been paid to the specific clinical context in which these cultural beliefs function and greater attention has been paid to the development of international guidelines. A tailored approach to customizing guidelines to a specific context required the involvement of physicians and other healthcare workers to ensure guidelines were appropriately adapted to the culture and context of the practice environment.

Statement of the Problem

Harrison et al. (2013) shared that local implementation of international evidence-based guidelines increased and was mandatory in some communities. In the developing world, creating local clinical practice guidelines was challenging because of the costs, time constraints, and access to local subject matter experts. However, Harrison et al. (2013) warn that adjusting guidelines to fit the culture and context of specific clinical settings risks diminishing the strength of the clinical evidence and can call into question the quality of the evidence and scientific validity of the revised guidelines.

However, protecting the quality of evidence without accounting for culture can prove ineffective. Unwin et al. (1999) reported on the customization of British clinical practice guidelines for non-communicable diseases in Tanzania and Cameroon, specifically hypertension and diabetes. The study used the British guidelines as the standard of care and included an

assessment of available Western medicines and medical equipment in collaboration with Tanzanian and Cameroon clinicians. Adjustments to the British guidelines were primarily contextual meaning certain evidence-based recommendations were removed from the guidelines if the resources needed such as specific medications and medical specialists were not available in Tanzania or Cameroon. Thus, what remained as Tanzania's and Cameroon's clinical guidelines for hypertension and diabetes were still culturally British.

The result of this approach used by Unwin et al. (1999) manifest in the outcomes of the Kolling, Windley, and von Deden (2010) qualitative study. The Kolling et al. study, comprised of patient interviews, reported on diabetes in Tanzania 11 years after the Unwin et al. (1999) study. The Knolling study found that health outcomes were still very poor and cultural realities such as medical pluralism, access to primary care, family dynamics, and lifestyle were contributing factors to diabetes health outcomes and health seeking behaviors.

These cultural factors were not components of the adjusted clinical practice guidelines for Tanzania. Kolling et al. (2010) research outcomes described some of the cultural beliefs of patients regarding health seeking behaviors including their concerns over the high cost of Western medicine and the dependency on local healers. Thus, physicians in Tanzania may have believed in the evidence-base medicine of the British clinical guidelines for diabetes; however, the cultural context of care in Tanzania proved incongruent with those guidelines. When developing CME to support clinical knowledge translation attention to the significant variability in Sub-Saharan African healthcare cultures and contexts and the physicians' clinical use of best evidence should be considered. There is no known published study in the CME literature investigating the influence of physician's beliefs on clinical knowledge translation in Sub-Saharan Africa.

Significance of the Study

Within the medical profession, evidenced-based clinical practice guidelines play a crucial role in optimizing health care across a variety of medical practice settings. Specifically, the WHO, national government agencies, Ministries of Health, and other organizations such as medical specialty societies, and patient advocacy groups have promoted and actively participated in the development of clinical practice guidelines interfacing with all aspects of clinical medicine. Public and private sector resources were dedicated to controlling variability in the costs and quality of care, used human resources to assist with the deployment and monitoring of clinical guidelines adherence to attain the goal of improved patient health outcomes (Rashidian, Eccles, & Russell, 2007). However, a significant disconnect exists between the development and deployment of clinical practice guidelines and their use in everyday clinical practice. The rapid pacing of innovation in medicine overran the implementation of best practices and created the need for enhancements in the field of clinical knowledge translation.

Furthermore, studies indicated that clinical practice guideline dissemination and implementation plans (a) may not be sufficiently extensive as in the Baatiema et al. (2017) study, (b) may not consider the culture of the patient population as seen in the Aborigo et al. (2013) study, or (c) may not take into the consideration the culture of a clinical specialty such as seen in the Kitto et al. (2011) study. Rashidian et al. (2007) claimed that without dissemination and implementation plans, an effective method of evaluating adherence was lacking. However, attempts have been made by guidelines developers such as medical specialty societies to create and use clinical registries. These registries are depositories for specific clinical data which are supplied by physicians or members of the physician's team to monitor clinical practice and patient outcomes.

These specialty societies used continuing medical education (CME) to educate physicians on the development, evidence, and expected clinical outcomes of the guidelines the medical specialty society developed. For years, the prevailing belief was that if physicians knew more, their practice of medicine would improve. The result is volumes of highly redundant CME content aimed at changing behavior by providing information “on safety, efficacy and cost-effectiveness of intended behaviours” (Rashidian et al., 2008, p.150). Thus, the measures of CME effectiveness focused on whether specific behaviors changed based on a change in specific clinical outcomes. Olson (2016) observed that CME research must move beyond the binary of whether or not CME works, and developers and evaluators need to pay far more attention to the context in which it works.

CME activities were planned and implemented throughout Sub-Saharan Africa by international medical specialty societies, overseas medical schools, local Colleges of Physicians and Surgeons, non-governmental organizations (NGOs), and local hospitals and medical specialty societies. However, there were few published studies or reports as to whether physicians implemented what they learned within their clinical work. In short, in Sub-Saharan Africa, knowing how clinical knowledge is translated into practice via CME remains unknown.

This study contributes to the CME literature by taking a qualitative, theory-based approach to the development, execution, and clinical knowledge translation of accredited CME within the culture and context of the Republic of Ghana’s health care environment. This research went beyond the traditional research of CME effectiveness by providing an enriched understanding how formal knowledge via CME and informal knowledge via socialized beliefs of physicians influence clinical knowledge translation. Investigating influences of salient beliefs

grounded in culture and context on physician behavior may call for a reconsideration of how CME is developed in Ghana and elsewhere.

The consideration of physician beliefs into the diagnosis and management of hypertension was critical as hypertension is a lifestyle disease. Lifestyle diseases are a subset of non-communicable diseases associated factors such as diet, exercise, or tobacco use. Hypertension is known as a silent killer since many patients do not feel sick, but may exhibit general symptoms such as low energy, dizziness, or headaches. These symptoms are clinically asymptomatic, and it is not until the patient has suffered a stroke or is severely ill that medical investigations are done to establish a diagnosis of hypertension, or other co-morbidities such as heart failure or diabetes.

While hypertension is not visible, obesity is and a major contributing factor to the disease. De-Graft Aikins (2007) reports that in Ghana, “childhood obesity has increased 3.8 fold from 0.5% in 1988 to 1.9% in 1993/94” (p.155). In 2005, Biritwum et al. reported 21.1% of the Ghanaian adult population to be overweight (15.6%) or obese (5.5%). By 2016, Ofori-Asenso, Adom, Laar, and Boateng reported that approximately 43% of the adult population of Ghana is overweight (25.4%) or obese (17.1%), meaning in the span of approximately 10 years, the rate of adult obesity has more than doubled in Ghana.

When it comes to being overweight or obese, there are Sub-Saharan African communities that have the cultural belief that excessive weight is socially favorable and associated with wealth. Overweight women are more desirable marriage partners within certain Sub-Saharan African communities. Some Nigerian communities practice fattening brides before their wedding. In Ghana, this perception is slowly changing as more Western ideals of beauty and diet

increase (Dake, Tawiah, & Badasu, 2010). Thus, ideals around attractiveness, health, and wellness are culturally driven.

How people perceive health and what it means to be in good health are highly dependent on culture. As hypertension is a relatively new disease for Ghana, this hidden asymptomatic disease is correlated highly with lifestyle factors and is currently incurable. An inquiry into understanding how Ghanaian cultural norms around health/wellness as manifest in physicians' beliefs may result in identifiable themes as to how clinical knowledge about hypertension is or is not translated into the medical practice, which may add insights toward the improvement of patient care and decrease in mortality and morbidity in Ghana and throughout Sub-Saharan Africa.

Purpose of the Study

The purpose of this qualitative study is to identify the themes regarding Ghanaian primary care physicians (PCPs) beliefs' and whether such beliefs influence clinical knowledge translation of Ghana's hypertension clinical practice guidelines into the care of adult patients. The locus of this research took place in 2018 in the Republic of Ghana where perceived barriers and enablers to implementing hypertension guidelines were included in the body of this research. The key considerations of this research included describing how hypertension and clinical practice guidelines were understood by Ghanaian primary care physicians as evidenced by the physicians' beliefs as shaped by formal and informal (culture and context) knowledge systems. This can inform how or if CME content which incorporates culture and context does or does not translate into physician knowledge belief systems and any ensuing impact on patient care.

Medical specialty societies, Colleges of Physicians & Surgeons, and patient advocacy groups that not only develop accredited CME but are often the authoring organizations for

clinical practice guidelines may also benefit from this study. Recommendations from this research may provide insights into not only how the organization's design and develop CME content that is culturally and contextually appropriate for various global audiences; the recommendations can potentially create a feedback loop for these organizations as they use CME educational outcomes data coupled with clinical data to improve the structure/presentation of their guidelines.

Research Questions

The central research question for this study is: How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?

Sub-questions include:

1. How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to cultural and contextual belief systems that they hold?
2. How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?
3. How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?

Theoretical Framework

The Theory of Planned Behavior (TPB) considers how a person's background factors influence salient beliefs which in turn determine a person's intention to perform or not perform a specific behavior. Beliefs are complex constructs for which TPB subsumes into three major categories: behavioral beliefs and attitudes, normative beliefs, and perceived behavioral control (Ajzen, 2017). Each category of beliefs is dynamically influenced by one another and by background factors to varying degrees and magnitudes. Background factors include such

constructs as formal knowledge systems, spiritual systems, bio-social status, socio-economic status, indigenous heritage and culture, and neocolonialism and post colonialism (political ideology). Figure 1.2 below, is a flow chart of the elements that comprise TPB.

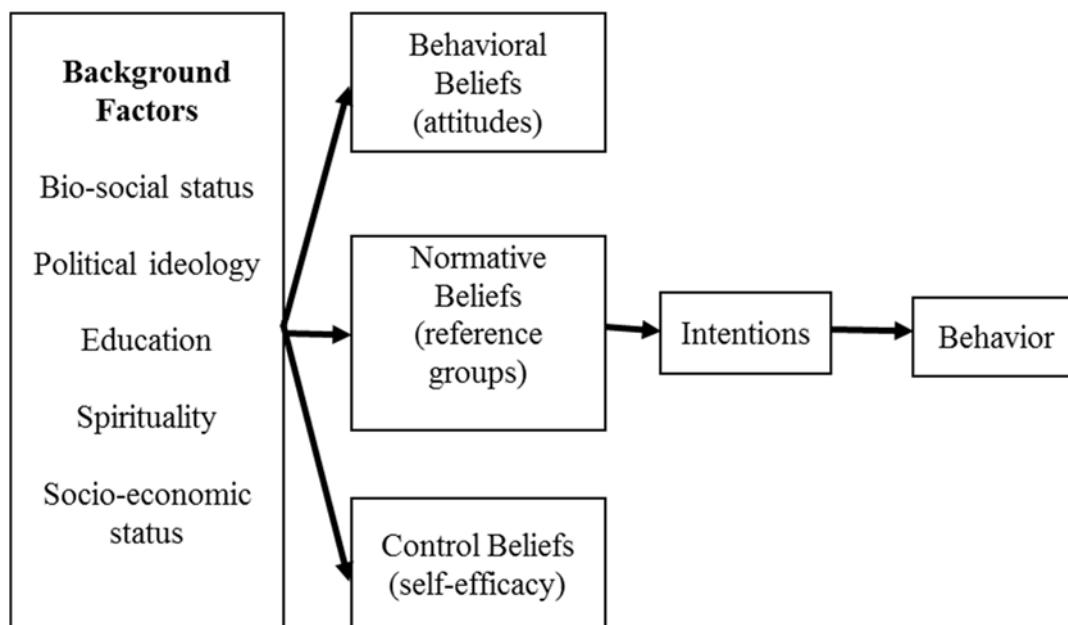


Figure 1.2 Theory of Planned Behavior.

This study utilized the TPB to ascertain if and how beliefs impact clinical knowledge translation. To better understand how beliefs influence clinical knowledge translation, understanding a physician’s behavioral beliefs toward certain clinical behaviors could help. Iwelunmor et al. (2017) reported, “As stakeholders have the ultimate say as to what evidence was adopted and used, understanding their perceptions may guide efforts to scale-up known evidence-based task-shifting interventions suitable for low resource setting in Sub-Saharan Africa (SSA)” (p. 1). In the Achonduh et al. (2014) study of uncomplicated malaria in Cameroon researchers claim, “values and priorities of clinicians in the case management of malaria were in contrast to the evidence-based guidelines recommended by WHO” (p.2). Therefore, attempts to improve evidence-based care would be compromised if the behavioral beliefs and attitudes of the clinicians were not addressed. Primary care physicians in Ghana select what knowledge they

intend to translate into the care of their hypertensive patients. Thus, understanding their behavioral beliefs toward evidence-based guidelines could help identify ways to improve guidelines or guideline adherence.

Normative beliefs are shaped by family, religion, education, laws, and community. In a qualitative grounded theory study that addressed social and cultural phenomenon associated with a physician social network, Cohen, Levy, Castel, & Karkabi (2013) concluded, “Physicians’ professional networks have a social role that is expressed by a feeling of belonging to a community, as well as a professional role of capturing and disseminating medical knowledge during physicians’ decision-making processes” (p. 496). The practice of medicine is a highly socially interactive field where normative beliefs are shaped in part by where physicians attended medical school, completed their residency programs, years in clinical practice, and associations with clinical colleagues. Therefore, clinical knowledge transition is not only affected by a physician's behavioral beliefs about clinical practice guidelines, but also by social interactions with patients, other healthcare professionals, and their physician peers.

Cohen, Levy, Castel, and Karkabi (2013) reported the main reasons physicians in their study sought clinical recommendations were:

- (i) asking for the personal experience of colleagues regarding a clinical dilemma or look for a specialist;
- (ii) raising issues that involve psychosocial aspects such as age or social conditions;
- (iii) a need for an integrated perspective when the patient’s condition involves several clinical problems;
- (iv) consultation about medications and discussing alternatives. (Cohen, Levy, Castel, and Karkabi 2013, p. 498)

The third category of TPB, control beliefs influence a physician's clinical knowledge translation process as well. This component of TPB looks at a primary care physician's belief as to how easy or how hard it is to execute a certain behavior or act in a certain way. Perceived behavioral control (or self-efficacy) plays an increasing role in physician education. Webb states, "Measures of [behavioral expectations] BE are thought to encompass people's perceptions of factors that may facilitate or impede performance of a behavior, and thus BE may be a better predictor of behavior than traditional measures of Intention" (Webb et al., 2006, p. 252).

However, Webb et al. (2006) noted that some study subjects tend to overestimate the amount of control they have in making certain behavior changes. He recommended that effect size be used to objectively mitigate this phenomenon or that independent raters be used to assess the level of control subjects have in changing behavior (Webb et al., 2006). It should be noted that an underestimation of the amount of control could also occur, yet this is not mentioned in Webb's analysis. It is possible a physician, due to burnout, may feel more powerless than they are.

Lastly, the knowledge-to-action cycle as described by Graham et al. (2006) details the clinical knowledge translation process. Figure 1.3 details the components of the clinical knowledge translation process. As shown in Figure 1.3, the clinical knowledge translation model is dynamic allowing physicians to continuously shift back and forth around the model as needed to address various clinical issues.

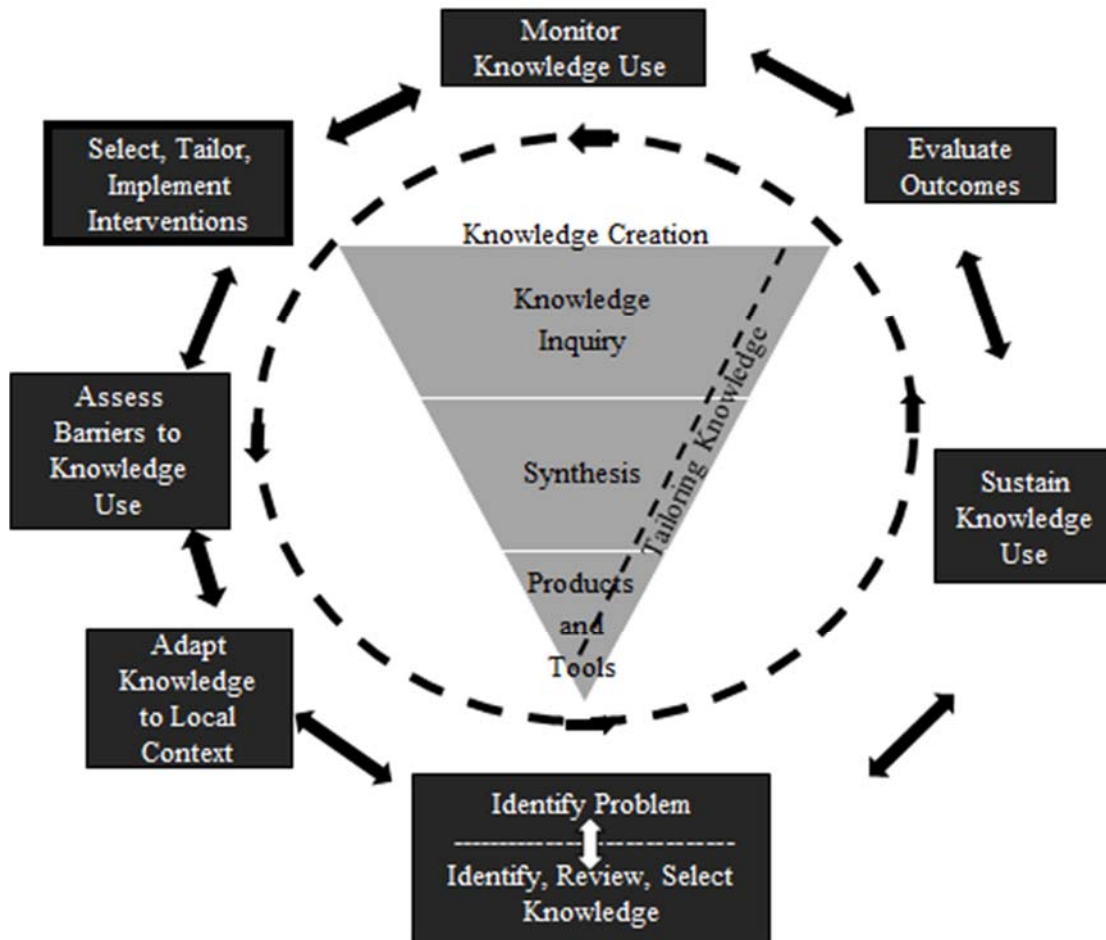


Figure 1.3 Process model of clinical knowledge translation. Adapted from “Lost in Knowledge Translation: Time for a Map?” by I.D. Graham, J. Logan, M.B. Harrison, S.E. Straus, J. Tetro, W. Caswell, and N. Robinson, 2006, *The Journal of Continuing Education in the Health Professions*, 26, p. 19. Copyright 2006 by the Journal of Continuing Education in the Health Professions.

For example, a physician may identify a problem, review and select the knowledge to address the program and while attempting to adapt the knowledge to the local context, they may identify a barrier that requires the physician to review and select different knowledge to use. The agility of the model allows for its use in a variety of clinical environments. However, as the model focuses on knowledge only, it does not consider what physicians believe to be true about that knowledge or how those beliefs may influence various components of the model.

Research Design

Family medicine, general internal medicine physicians, and medical officers who live and practice full time in Ghana and manage the care of hypertensive adult patients were the population of study for this research. Physician assistants comprised a notable portion of primary care providers. However, the level of training of physician assistants compared to physicians is significantly different enough to consider physician assistants as a separate clinician population, and therefore, they were not part of this study. Data pertaining to hypertension in children and pregnant women were excluded from this study as they represent special populations where different clinical guidelines were required. Due to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) of the United States and comparable laws in Ghana, patient interviews and medical records were not be part of this study.

One-on-one initial and follow-up interviews using WhatsApp were conducted with participants using questions based on the TPB. All interview responses were transcribed using line by line coding. Data were initially coded based on variables representative of background factors, behavioral beliefs, normative beliefs, and control beliefs. Figure 1.2 provided a list of reference categories for the development of coding labels. Subsequent rounds of coding were based on repeated topics from each previous round of coding to ensure the physicians' voices are represented in the resulting themes. Collected data were triangulated by (a) peer debriefing with a Ghanaian general internal medicine physician and a Ghanaian family medicine physician; (b) concept maps of each interview for the identification of themes to be compared to (c) the coded transcripts.

Assumptions

An underlying assumption of this research was that culture and context matter in the development, deployment, and implementation of continuing medical education to improve clinical knowledge translation. Exposing Ghanaian primary care physicians to clinical practice guidelines may not be sufficient in aligning practice behavior with guidelines. Further, it was assumed that adherence to guidelines that are culturally incongruent with the patient population hinder patient outcomes. Additionally, a physician's salient beliefs shaped by culture and context were seldom taken into consideration when developing and deploying clinical practice guidelines.

A physician's background including their experience and beliefs which may entail a thread of application from indigenous medicine, medical pluralism, the place where they received their medical education, the number of years in medical practice, access to medicines, access to and ability to interpret diagnostic tests, and other factors may or may not be translated into clinical practice. These background factors influence a physician's behavioral beliefs, normative beliefs, and control beliefs and deserve consideration to truly address any intentions to effectively change practice.

While guideline adherence was discussed by study participants relative to the clinical knowledge translation process, this research did not intend to assess adherence or non-adherence to hypertension guidelines as this is ultimately measured by patient outcomes. Rather, this study focused on a critique of the clinical knowledge translation experience by primary care physicians with relationship to their own cultural and contextual biases, and application to practice. Finally, this research did not assume the participating physicians were or were not familiar with American, British, Ghanaian, or any other hypertension guidelines.

Positionality of the Researcher

I am African American, not Ghanaian. With the complex history of the transatlantic slave trade and the difficulties it presents for African Americans to trace specific ancestral roots, many African Americans interested in their African ancestry often look toward Ghana. Formerly known as the Gold Coast, modern day Ghana was once one of the most active hubs of the transatlantic slave trade with Cape Coast Castle (a World Heritage site), St. George's castle in Elmina, and Oso Castle. My positionality within this research context is that of a privileged American. By American standards, I am not socially or economically privileged; however, in Ghana my positionality changes notably.

In her speech during the Bonnier GRID11 conference in Sweden, Nigerian author Chimamanda Ngozi Adichie discussed privilege as an African. She spoke of the importance of treating Africans with human dignity and not viewing Africans as solely charity cases. Like Ms. Ngozi Adichie, I never considered myself privileged. I cannot take for granted many things that White Americans do not need to consider. Ngozi Adichie speaks of privilege from the perspective of classism, where as I as an American, tend to speak of privilege in terms of racism. Both are relevant. Once I cross the ocean and enter Ghana, things change. In the video recording of her speech, Ngozi Adichie states, "that part of being privileged is denying privilege" (Bonnier, 2017). Author and advocate Ngozi Adichie's initial response to being called privileged was to deny the label; my initial response and responsibility as a researcher is to acknowledge and manage my privilege while working in Ghana by showing respect and civility based on Ghanaian standards.

Privilege, as Ngozi Adichie points out, brings with it a certain power. She goes on in her speech to caution the audience not to turn their privilege into a personal virtue. Ngozi Adichie

warns that having access to better does not make one better. “Privilege complicates charity” (Bonnier, 2017). I do not view this research as an act of charity, but as contributing to the body of literature within the medical education field to support current efforts of Ghanaians with hypertension and the physicians who care for them. I do not know local tribal languages, nor most of the Ghanaian customs outside of a few basic social graces. Over the years, my positionality has evolved to an outside-insider as one who has been given a Ghanaian name, Abena Maanu. By forming relationships with Ghanaians, I am occasionally incorporated into some common social interactions. Throughout the process, I must be mindful of self-positionality, self-cultural context when observing and delving into the cultural contexts of medical practice in Ghana.

Summary

Understanding primary care physician beliefs and how those beliefs influence clinical knowledge translation matter in the care of adult hypertensive patients living in Ghana. Correlating physician beliefs with other known data such as resource availability, formal and informal medical knowledge, and clinical contexts may improve the overall design of CME activities and other interventions used to improve hypertensive patient outcomes.

Chapter one introduced key issues that contributed to disconnects between clinical practice guidelines and medical practice. The statement of the problem, significance of the study, purpose of the study, research questions, theoretical framework, and the positionality of the researcher were provided. Chapter two consists of a review of the literature regarding the cultural context of Ghana that may contribute to the prevalence of hypertension, the impact of medical pluralism on patient care, and the consideration of incorporating cultural context into CME to facilitate clinical knowledge translation. Chapter three details the study methodology from the

constructivist perspective and includes the data collection techniques, data analysis process, and quality assurance process. Study findings, thematic interpretations, and analyses comprise chapter four. The final chapter five consists of discussion, implications, and recommendations pertinent to the application of findings to the clinical knowledge translation process specifically in Ghana; however, may be applied more broadly to CME in other countries globally.

Chapter Two: Literature Review

Owoahene-Acheampong (1998) reinforced the ideal of the cultural context of health. The connections of a cadre of beliefs concerning what it means to be healthy or ill are culturally and ideologically driven. The 1997 Institute of Medicine report, *Improving Health in the Community: A Role for Performance Monitoring*, agreed with Owoahene-Acheampong that a person's ability to work (productivity), capacity to have a family (reproductively), and to be well (psycho-spiritual) all contribute to what it means to be in good or poor health. Given the complexities of health and what it means to manage health, this literature review contains three sections – (a) the cultural context that contributes to the prevalence of hypertension in Ghana; (b) the impact of medical pluralism on patients, physicians, and TACM practitioners; and (c) the consideration of incorporating cultural context into continuing medical education (CME) to facilitate clinical knowledge translation.

Method

Three areas of study were explored as part of this literature review: CME in Sub-Saharan Africa, the theory of planned behavior (TPB), and clinical knowledge translation. The University of Wisconsin-Milwaukee's online databases were used along with searches of the National Center for Biotechnology Information, U.S. National Library of Medicine, and PubMed.gov. Searches of English-written literature were repeated over the course of five months as search algorithms change over time and produce slightly different results. The review of the literature included articles, dissertations, and books based on the keywords such as: hypertension in Ghana, CME in Sub-Saharan Africa, primary care in Africa, hypertension in Sub-Saharan Africa, clinical knowledge translation, continuing professional development, and the theory of planned behavior.

Ghana gained independence from Britain in 1957; therefore, literature discussing post-colonial Ghana and published after 1957 were considered. Ghana has produced a notable amount of peer-reviewed, indexed literature about its healthcare and medical practices. Consequently, sufficient literature on the current state of hypertension and CME that is specific to Ghana was accessible and included in this review. An internet search on hypertension guidelines in Ghana resulted in access to the *Standard Treatment Guidelines, Sixth Edition*, by the Republic of Ghana Ministry of Health published in 2010. An internet search of the Republic of Ghana National Drugs Programme which is a division of the Ministry of Health yielded the 2017 guidelines. The 2010 and 2017 guidelines served as the hypertension guidelines used in this research. A search of the Ghana Medical and Dental Council website produced data on the accredited continuing education activities which are summarized as a component of this review.

Priority was given to literature that focused on the actions or perceptions of physicians. Literature that addressed healthcare workers in general, specific clinicians who are not physicians (i.e., nurses) or patients were considered in terms of the context in which the physicians work. There is a significant body of literature on HIV in Sub-Saharan Africa; however, for purposes of this research, priority was given to literature about hypertension with some consideration for literature about Type II Diabetes Mellitus as the two conditions tend to be discussed in tandem.

Multiple terms are used to describe the two forms of medicine. Western medicine is often referred to as Orthodox medicine or biomedical medicine. Indigenous medicine is commonly referred to as with traditional medicine or herbalism by local populations. For purposes of this research, the terms Western Medicine and traditional alternative complementary medicine (TACM) are used. The introduction and growth of Western medicine did not diminish TACM

and therefore the primary care physicians (PCPs) in Ghana practice in a highly medically pluralistic environment. Finally, there is an extensive body of literature about CME focused on North America and Europe. Some literature from these regions is included in this review, but priority was given to CME literature from Sub-Saharan Africa specifically. This review provides an integrated perspective of the CME and clinical knowledge.

Cultural Context of Hypertension in Ghana

The ComHIP project was a comprehensive quasi-experiential study looking at multiple factors of primary hypertension. The study population's lifestyle indicators including sleep habits (such as snoring), salt intake, amount of physical activity, and body mass index (BMI), were also recorded in the ComHIP study by Community Health Officers (nurses). Multiple direct patient interventions were part of this community-based initiative. A key finding from this study was that despite relatively high rates of hypertension awareness in the study population, low levels of hypertension treatment and control were found among the high rate of hypertensive patients. The ComHIP study called for a thorough investigation of the barriers to management and BP control (Lamprey et al., 2017). Cultural and contextual barriers to effective management of hypertension in Ghana are explored here.

How hypertension develops, is diagnosed, and managed by both patients and physicians is culturally driven. The context of the healthcare environment, access to health resources, and the equitable distribution of those resources contribute to health outcomes of hypertensive patients as well. Furthermore, as a lifestyle disease, hypertension is heavily impacted by habits around diet, exercise, tobacco use, use of herbal remedies, and cultural beauty standards. The first section of this literature review will investigate these cultural and contextual factors that contribute to the prevalence of hypertension.

Food Security

Food security becomes an increasing complex issue in a middle-income country such as Ghana. In 2013, 1.2 million people living in Ghana met the criteria for being food insecure with another 2 million considered vulnerable to being food insecure. Those who are or are at risk of food insecurity in Ghana tend to be farmers, unskilled workers, and food processors (Government of Ghana, 2013). Small family owned farms produced fresh fruits and vegetables sold daily at open air markets and by street vendors throughout the country while small family owned shops sell canned/processed foods. Lack of proper food storage facilities, an unstable power grid, and poor roads for food transport means much of the food produced in Ghana did not have a long shelf-life. Therefore, the result was a tendency to consume more canned foods. Canned foods use preservatives, salt, being chief among them, and a major contributor to hypertension.

The Ministry of Food & Agriculture in Ghana developed a program specifically for the promotion of perennial crops by incentivizing farmers to grow specific crops. Most crops in the program were not food crops. Shea butter farming has exploded in the last 10 years as the global beauty industry has significantly increased the demand for shea butter. Coconut, rubber, and palm oil are all crops with industrial uses (Ministry of Food & Agriculture, n.d.). With the expanding Africa Free Trade Agreement for which Ghana is a member, economic incentives to produce industrial crops for international trade increase, which in turn may be a disincentive for nutritious food crop production.

Significant undernourishment and over nourishment coexist in Ghana, creating a double burden of disease. The Economist Group, with sponsorship by the DuPont Company, annually publishes a global food security index. According to the Economist Group website, this index

looks at “affordability, availability, and quality across a set of 113 countries. The index is a dynamic quantitative and qualitative benchmarking model, constructed from 28 unique indicators, that measures these drivers of food security across both developing and developed countries” (The Economist Group, 2017, para 1). According to the 2017 report, Ireland ranked number one in the world as the most food secure country followed by the United States. Ghana ranked number 76th in the world. For Sub-Saharan Africa specifically; South Africa ranked number one as the most food secure (44th globally) followed by their neighbor directly to the north, Botswana (52nd globally), and Ghana ranked third. This report also identified the 10 countries with the greatest increase in food security index scores within a calendar year. Ghana was one of the top 10 most improved on the continent with a 1.2-point increase.

To address food security and support the economy, the Ministry of Food & Agriculture in Ghana supported rice projects such as the Nercia Rice Dissemination Project (NRDP). According to the Ministry of Food & Agriculture (n.d) website, “The objective(s) of the Project are (i) to contribute to increasing locally produced rice for food security; and (ii) to conserve foreign exchange earnings through import substitution”. This program had many merits, however, it should be pointed out that rice is a starch. Starches are necessary for the human diet, but too much starch can lead to chronic diseases like hypertension. The Nercia Rice Dissemination Project included the development of milling facilities which supports economic growth in those areas. However, milling rice into white rice removes the valuable nutrients that make rice a beneficial food. Management of taste preferences (such as white versus brown rice) and taste management in Ghanaians impact diet choices. These shifts in tastes and food preferences mean changes to the Ghanaian diet.

Ghanaian Diet

According to the United Nations Food and Agriculture Organization (FAO), “The Ghanaian diet largely relied on starchy roots (cassava, yams), fruit (plantain), and cereals (maize, rice). Starchy roots and cereals still supply almost three quarters of the dietary energy and diversity of the diet remains low” (United Nations, 2010, para. 3). Ghana is a large producer of cocoa as well. During the dry season, finding affordable fruits and vegetables can be a challenge. In an epidemiological report on obesity in Ghana, Biritwum et al. (2005) reported the following dietary habits in Ghana represented in the table below. Overall, as Table 2.1 shows, the report suggests there does not seem to be significant differences in fruit and vegetable consumption in the population (Biritwum et al., 2005). Therefore, access and cultural acceptance of consuming fruits and vegetables does not seem to be an issue.

Table 2.1

Daily fruit and vegetable consumption in Ghana

	Typical daily fruit consumption	Typical daily vegetable consumption
Underweight	4.00	2.54
Normal weight	4.00	2.60
Overweight	3.89	2.47
Obese	3.53	2.59

Note: Adapted from “The Epidemiology of Obesity in Ghana,” by R.B. Biritwum, J. Gyapong, & G. Mensah, 2005, *Ghana Medical Journal*, 39(3), p. 84. Copyright 2005 by the Ghana Medical Association.

The FAO reported that the Ghanaian diet did provide for the energy consumption needs of the population. However, the daily requirements of proteins and lipids were lower than recommended levels (United Nations, FAO, 2010). Ghana is a coastal country whose southern border is the Gulf of Guinea which is part of the Atlantic Ocean. Therefore, Ghana had an active fishing industry. Fish accounted for 60% of the animal protein in the Ghanaian diet. However,

frozen meat imports increased by 16% in just one year between 2010 and 2011 (Government of Ghana, 2013). Therefore, the palette of Ghanaians was slowly changing and thus the people were consuming more processed foods preserved with salt which was indicative of a Western diet.

Western Diet and Medications

The brands Minute-Maid®, Nestle®, Coca-Cola®, and Heineken® had a growing market in Ghana courtesy of rapid urbanization and adoption of Western culture. Such rapid urbanization altered food access, choices, and consumption patterns which in turn increased the demand for imported foods. Wheat and rice-based foods particularly increased (United Nations FAO, 2010). Further, Biritwum et al. (2005) reported that though the overall rate of obesity in the country was relatively low in 2005, the rate of obesity in the capital city of Accra was dangerously high.

Along with the increase in the consumption of a Western diet, there was an increase in the use of Western medications. The 2010 and 2017 hypertension guidelines for Ghana call for the use of several Western biomedical drugs. In a review by Doty, Shah, and Bromley (2008), classes of drugs used to manage hypertension can create drug-induced taste disorders in patients. Calcium channel antagonists were known to cause smell and taste disturbances while diuretics (very effective in blood pressure control and widely used) have not been known to alter taste with the exception of one particular drug, Amiloride.

Angiotensin-converting enzyme (ACE) inhibitors were a category of drugs identified in the Ghanaian 2010 and 2017 hypertension guidelines and were a very common antihypertensive medication. ACE inhibitors were known to alter taste perception in patients including a loss of taste, sweet taste, or a metallic taste. Some patients reported sweet tasting foods tasting salty or

bitter. ACE inhibitors caused more presentations of ageusia and dysgeusia (taste disorders) than other antihypertensive drugs. Further, patients that may have co-morbidities such as HIV/AIDs or heart failure, and who were taking antiviral medications or other cardiovascular medications may experience drug-induced taste disorders (Doty et al., 2008). Taste disorders can cause patients to over season their food including increasing the amount of salt to compensate for taste disturbances. Taste disorders could also cause some patients to discontinue the use of medications as well.

Tobacco use

Tobacco use is also known to impact taste. Advertising cigarettes is illegal in Ghana and there was a significant public health initiative to eliminate smoking in the country. Smoking cigarettes changes a person's palette and thus changes the tastes of food (Doty et al., 2008). People who smoke tend to use more salt and the amount of salt consumed increases with the number of cigarettes smoked per day and over time (Choi, Park, Kim, & Lim, 2015). Low rates of tobacco use/smoking means Ghanaians reduce their dependency on using salt in order to compensate for losses or changes in taste.

Beauty and Obese

Obesity in West African nations such as Ghana created a challenging cultural conundrum. The mantra for women in this region was big is beautiful. It was desirable socially for a woman to be overweight. Thickness was considered healthy, sexy, and thus ideal. Benkeser et al. (2012) refers to the pre-marital fattening rooms in Nigeria as an example of the culture surrounding women and weight. Benkeser and his team conducted a study of women living in the capital city of Accra. Part of the study included documenting certain clinical features like age and current weight, BMI, etc. Other socio-economic factors like employment status, marital

status, and other data were collected. Benkeser et al. (2012) provided participants a survey which included three body image questions. Negative ratings on their body image survey meant participants desired to be heavier and positive ratings meant they wanted to be slimmer. Null scores meant the participant was satisfied with her body image (Benkeser et al., 2012).

The most frequently selected ideal Ghanaian woman image was one with a BMI that corresponds with being overweight. Almost 75% of women in the study reported some level of dissatisfaction with their weight. Forty-one-point-eight percent (41.8%) wanted to weigh less while 30.4% wanted to weigh more. Of the approximately 25% of the women in the study who reported being satisfied with their current weight, 61% of those women had BMI scores over 25 and were overweight or obese. Interestingly, those women who spent their childhood in an urban area were “less likely to desire to be heavier than their rural counterparts” (Benkeser et al., 2012, p. 72).

Plant-based Remedies

Ghana frequently faced shortages in Western medicines. Thus, many times, patients were unable to get drug prescriptions filled. TACM practitioners including herbalists, created their own remedies and therefore were not dependent on the same supply chain as Western medicine. The use of herbal and other plant derived remedies is central to TACM. According to Ahiah (2015), some herbs such as Yilinga, were widely known to be toxic. For example, abortion and miscarriage were repeatedly found in women who take Perika. Also, Buringa was used to force feed babies but can cause blindness if overdosed.

2010 and 2017 Ghanaian hypertension guidelines do not mention herb-drug interactions and hypertension treatments by TACM practitioners were not immune to the negative effects of herb-drug interactions. In 2005, Izzo, Di Carlo, Borrelli, and Ernst reported herb-drug

interactions were a serious concern because patients often did not inform their physician about the herbal supplements they were taking. Similar to herbal supplement markets in the U.S., Ghanaian herbal medicines tend to be combinations of ingredients, unspecified to patients which may increase the likelihood of complications due to herb-drug interactions. Thiazide diuretics which are common medications prescribed for hypertension interact with the herb Ginkgo causing an increase in blood pressure. The mechanism of this herb-drug action was unknown at the time of this study, and the combination could be dangerous (Izzo et al., 2005). The high likelihood that patients were taking some form of herbal medicine in medically pluralistic Ghana is a recognized reality.

Medical Pluralism

According to Gabe et al. (2004), *Medical Pluralism* is “the coexistence in a society of differing medical traditions, grounded in different principles or based on different world-views” (p. 183). In the Republic of Ghana, medical pluralism exists in the form of Western medicine and Indigenous medicine. Western medicine formalized when medical schools began during British colonial rule in Ghana. Sir. Guggisberg, the British Governor of Ghana from 1919-1927 is noted for founding the first teaching hospital in Ghana - Korle-Bu Teaching Hospital. The Governor “envisioned that Korle Bu Hospital would one day become a foremost medical school training young men and women as doctors in their own land, instead of going abroad” (Ratel, n.d., para 1).

Founded in 2003, the Ghana Postgraduate Medical College activity promotes residency training programs within Ghana. This is in collaboration with the Ghana Medical and Dental Council, which coordinated house officer training, including physician placement in locations outside the major cities (Drislane, Akpalu, & Wegdam, 2014). Ghanaian medical students and

residents were taught to scrutinize clinical trials, conduct research projects, and “to base their practice of medicine on published clinical studies and texts, rather than anecdote, but also on individual patient physiology rather than reliance on protocols” (Drislane et al., 2014, p. 336). Drislane et al. described how Western trained physicians were to use explicit (formal) knowledge in the form of published research more so than tacit (informal) knowledge from experience.

Family Medicine as a specialty is fairly new to Ghana, with the first class of medical students being introduced to the specialty in 2005 (Essuman, Anthony-Krueger, & Ndanu, 2013). Ghana had a system of community health workers, health promotion officers, and assistants to support primary care. Primary care physicians (PCPs) provide consultation to many of these healthcare workers. In high-resourced countries like the U.S. and Canada, primary care services are physician-led. Primary care services tend to be the first point of contact for high-resourced countries that can afford an expansive primary care system headed by physicians with expanding nursing care and other allied health professionals. In the U.S. for example, the mid-2000s saw drug store chains like Walgreens and CVS placing nurse practitioners and physician assistants in their stores (clinics) as front-line primary care, much like African nations place community health officers in various outposts (Sururu, 2017).

Coexisting alongside Western Medicine in Ghana are the TACM practitioners. For centuries in Ghana and throughout the world, Indigenous medicine (also referred to in the literature as traditional alternative complimentary medicine) was widely practiced and continues today. Evans-Anfom described *Traditional, Alternative, Complementary Medicine* (TACM), as cited in Barimah (2013) as:

the sum total of all the knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental and social

imbalance and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing.

(p.203)

Alternative and complementary medicine has been practiced for years in the United States with therapies such as acupuncture and homeopathy all of which were fairly new to Ghana (Barimah, 2013). While TACM is regulated by government agencies such as the Food and Drug Administration in the U.S. and Ministries of Health other countries, it is not well regulated in much of Africa. Therefore, conflicts occur between Western medicine which is regulated in Ghana and TACM which is not well regulated. These conflicts had a direct impact on patient experiences and patient care. In Ghana, Barimah (2013) attested there was a division amongst TACM practitioners:

those associated with organisation and recognition by the government, and those associated with everyday practice. The political power struggle among the different [TACM] practitioners appears to be a major problem in terms of presenting a united front to the government in their fight for formal official recognition. (p. 205)

The lack of consistent, universal regulation created patient safety, efficacy, and cost-effectiveness issues. While Western medicine's clinical practice guidelines aim to address these issues and serve to maintain a standard of care based on best evidence; TACM practices often function in secrecy to protect the tribal and indigenous recipes passed down from generation to generation. Because of its lack of regulation, TACM practitioners in Ghana were not required to register with the government, participate in continuing education, or comply with clinical guidelines. The opposite is true for Western trained physicians.

Despite these differences in education, regulation, and medicine practice, TACM practitioners continue to constitute a large portion of the health care community throughout the African continent. TACM has been the primary practice of medicine for centuries all over the globe well before the invention of Western medicine. This practice of medicine is deeply ingrained into the culture and everyday life of Ghanaians. The World Health Organization reports that approximately 60% of the world's population uses indigenous medicine for the treatment of their illness and as many as 80% of the African population depends on indigenous medicine for some aspects of primary care (Aniah, 2015, p.20). According to Barimah (2013), 70% of Ghanaians received their medical care from TACM practitioners. Barimah (2013) also states that in Ghana, "traditional healers are generally preferred for the treatment of boils, impotency and barrenness, piles, cataracts, menstruation-related problems, one-sided headache, uncomplicated fractures, convulsions in children, sexually transmitted diseases and rheumatic disorders" (p.206).

One of the main reasons for patient preferences for TACM practitioners revolve around resource scarcity in Western medicine. Because of the significant and often reported shortages of Western trained health care workers (physicians, nurses, technicians, psychologists), Africans with no Westernized medical facilities available to them sought medical care from TACM practitioners. Additionally, many rural-living Ghanaians may need to travel great distances (sometimes on foot) to access Westernized medicine.

Moreover, Ahiah (2015) reported a ratio of TACM practitioner-to-population ratio of 386:1. This ratio of TACM practitioners-to-population is similar to the 2017 U.S. population-to-doctor ratio of 398.4:1 as reported by the World Health Organization's Global Health Observatory Data Repository. Thus, this review of the literature showed that Ghanaians have

slightly greater access to TACM practitioners than Americans have to doctors. The African Journal of Primary Health Care & Family Medicine reports Ghana has “a population to doctor ratio of 10032:1” (Lawson & Essuman, 2016, p.1). With 25 times the number of people per physician in Ghana compared to the U.S., the demands on Ghanaian physicians are intense. The Ghana College of Physicians and Surgeons (GCPS) identified 24 family medicine and 42 internal medicine Fellows in good standing as of 2016. GCPS also identified 27 family medicine and 32 internal medicine members in good standing of the College as of 2016 (GCPS, 2017). These 125 primary care physicians do not represent the total number of PCPs in Ghana; but provide some insight into the number of medical doctors in these specialties.

According to the Gaysi et al. (2017) qualitative study, differences in medical education contributed to a lack of communication between TACM practitioners and Western Medicine practitioners who are required by law to have far more formal, accredited, and rigorous training than that of TACM practitioners. Western Medicine practitioners work in severely overburdened systems and the workload did not allow much time for personalized patient care or additional medical training such as CME. However, TACM practitioners had more control over their patient volume and therefore could spend more one-on-one time with each patient, customize care to the specific patient, and sought their own additional education, assuming they could afford the training.

Reports indicated Western medicine PCPs had negative perceptions of TACM practitioners (Aniah, 2015). The PCPs belief that TACM practitioners were untrained and uncertified often negatively impacted the care of patients who informed their PCPs that they sought care from TACM practitioners. PCPs did not view TACM practitioners as a normative referent group in which positive beliefs were based. In a medically pluralistic society, the

difference in formal education between PCPs and TACM practitioners leads to the belief by PCPs that they were more qualified to manage care, particularly of more complicated conditions (self-efficacy). Despite these beliefs by Western trained physicians, patients and TACM practitioners appeared open and willing to move forward with a medically pluralistic culture that integrates both Western and TACM in a way that is beneficial to Ghanaians (Gaysi et al., 2017).

However, resource scarcity in Ghana went beyond the number of physicians. As Aniah (2015), indicated many patronize TACM practitioners because of cultural traditions and acceptability, “perceived efficacy, affordability, accessibility and psychological comfort” (p.21). Additionally, Aniah (2015) stated patients were less likely to patronize Western trained practitioners due to “inaccessibility of modern health services in terms of geographical availability of modern health care facilities and personnel and affordability of cost” (p.21).

The low socioeconomic status of many patients meant transportation to care, costs of care, costs of medications, and the costs of missing work to seek care mean going to a doctor was a very serious consideration for the medically indigent and their families. (Kolling, Windley, & von Deden, 2010). Additionally, limited financial resources in the Ghanaian population make purchasing biomedical medications difficult. According to the Ghanaian hypertension clinical practice guidelines, eight different drug categories are suggested for treatment including using multiple drugs for controlling stage 2 and stage 3 hypertension. Many medications for the management of hypertension required monitoring of potassium levels in the patient’s blood which in turn requires regular laboratory testing and added to regular cost per visit per patient. When PCPs believed there could be a financial harm to patients and their families, they may not order the tests or prescribe the medications.

To ease some of the financial burden on patients, Ghana's National Health Insurance Scheme was created in October of 2003 with the passage of Act 650 (Barimah, 2013). One of the goals of this law was to remove the cash-and-carry payment method for healthcare. However, the cash-and-carry system was still prevalent to this day. Patients were not discharged from hospitals until their bills were paid in full. For hypertension, the guidelines call for up to nine clinical investigations or tests. Each investigation costs money.

According to a patient chart review study by Ilesanmi et al. (2012) concerning the cost of blood pressure control in Nigerian patients, outcomes of their research demonstrated that approximately half the study participants (52.8%) spent 10 percent or more of their incomes on hypertension treatment. Patients with stage 2 or stage 3 hypertension, with co-morbidities, or prescribed three to four drugs spent considerably more. In 2013, the United States mean expenditure per person for the treatment of hypertension was \$669 for Medicare patients (Wang, Zhou, Zhuo, & Zhang, 2017). Therefore, regardless of where patients live, management of hypertension can be expensive. In contrast, many TACM practitioners operate on the barter system where a checker or some other product or form of payment is negotiated with the patient. Many TACM practitioners claim to be able to diagnose, treat, and even cure health concerns without the need for diagnostic testing and thus without the additional costs.

The rapid urbanization of Ghana resulted in most physicians practicing in cities. TACM practitioners work in rural and urban areas throughout all of Ghana and are accessible. They were willing and able to work in communities where Western trained physicians were not present. According to Aniah (2015), the overburdened medical system makes many patients feel ignored or neglected and patients feel rushed by PCPs and other Western Medicine practitioners, as opposed to "traditional medicine and its practitioners are favoured for commonly cited factors

related to accessibility, affordability, availability and acceptability” (Aniah, 2015, p. 22). Aniah reported that TACM practitioners took more time with patients and patients feel the TACM practitioners show more empathy.

Addo et al. (2012) reported that “poor delivery of care at community health centres, unreliable drug supply and unreliable equipment to measure blood pressure in some health facilities, unavailability of basic investigations, lack of assessment of target organ damage, risk stratification...” (p. 9) were challenges to effective hypertension control. In a 2015 exploratory study of the Bongo District of the Upper East Region of Ghana, Aniah reports that over half the patients surveyed (65.4%) had a positive perspective of the efficacy of TACM practitioners with 37.9% of these respondents rating TACM efficacy as good. Further, 57.8% indicated side effects as low. Overall, fifty-nine percent (59%) of patients were satisfied with TACM practitioner services (p. 24). Figure 2.1 below describes Aniah’s patient preference findings.

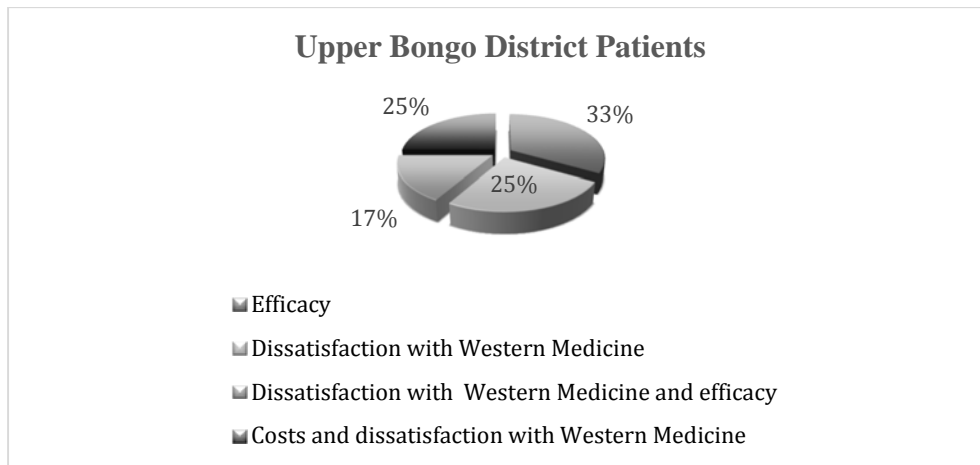


Figure 2.1 Reasons patients chose care from TACM Practitioners in the Bongo District. Adapted from “The Contributions of Indigenous Health Care Providers to the Health Care Delivery in Rural Ghana: An Exploratory Study of the Bongo District”, by P. Ahiah, 2015, *Science Journal of Public Health*. Special Issue: Health Behavior and Public Health. 3(1-1), p. 24. Copyright 2015 by the Science Publishing Group.

Aniah (2015) reported 76.7% of the TACM patients surveyed were satisfied or very satisfied with the effects of treatment and of those patients, they felt the TACM “treatments cured them of symptoms previously experienced, with many being able to return to their daily

activities very soon after use of medicines” (p. 24). However, a great concern of Western trained health care workers, policy makers, and communities was the tendency of TACM practitioners to promise cures for various diseases. This was not unique to Ghana, for in a diabetes study in Tanzania, researchers found that patients preferred to be cured of their diabetes as opposed to having their diabetes managed over a lifetime (Knolling et al., 2010).

The issue with TACM practitioner promises was that scientifically at this point in time, certain conditions or diseases were not currently curable - including hypertension. When it came to certain non-communicable medical conditions or diseases; by the time patients were evaluated by Western trained PCPs, their conditions may be advanced and more challenging (and more expensive) to treat than when they initially visited the TACM practitioner. Of great concern were the delays in the treatment for communicable diseases such as Tuberculosis if TACM practitioners fail to refer patients to modern health services (Ahiah, 2015).

With the exception of promised cures (even for diseases which currently do not have cures), the evidence presented in this literature review suggests that patients depended on TACM practitioners in part because of cultural beliefs but also due to a lack of sufficient number of Western trained providers, economic considerations, and a more positive patient experience contribute to people preferring TACM practitioners. Western medicine and TACM conflict more than complement each other. According to Gysai et al. (2017), the cultural collision between Western and TACM included significant debate and concerns regarding “regulation, efficacy, safety, intellectual property rights, lack of cross-cultural research, access and affordability, and protection of sacred indigenous plants and knowledge” (p 46).

Neocolonialism, Postcolonialism Political Ideologies

Up until the 1980s, British physicians would travel to Kurlle-Bu Teaching Hospital to vet students and proctor medical exams. These British physicians were not known to have practiced medicine in Ghana, many believed the goal of Ghanaian medical education was to graduate students who can effortlessly pass the British and American medical exams. Medical school in Ghana is based on the five-year program similar to Britain, and with fewer hands-on experiences compared to American medical schools (Drislane et al., 2014). The students could demonstrate they were as smart if not smarter than their White counterparts. There was a greater emphasis on medical knowledge compared to patient care/outcomes.

British and American medicine (and thus their medical schools) were designed to care for British and American populations. Ghanaian medical students may experience a cultural disconnect between how they are socialized into medicine and the actual clinical practice context. Further, many young Ghanaians leave Ghana to pursue medical education overseas. Very few physicians who leave return to Ghana before retirement age.

CME in Africa

Once a Western trained physician completes medical school and residency training (be it locally or abroad), continuing medical education (CME), and peer-reviewed medical journals are often the means by which a physician accesses new or revised medical science including clinical practice guidelines. According to the Ghanaian Medical and Dental Council website, CME is an “educational activity which helps to maintain, develop or increase knowledge, problem-solving, technical skills or professional performance standards all with the goal that practitioners can provide better health care” (Ghana Medical and Dental Council, 2015, p 2). CME is referred to by the Ghanaian Medical & Dental Council as Continuing Professional Development – CPD.

CME and CPD are often used interchangeably in the literature. African countries including Ghana, Nigeria, Egypt, Uganda, Zambia, Rwanda, and South Africa have CME accreditation systems and each of these countries have annual requirements for the number of credits physicians and other healthcare professionals must earn to maintain a medical license.

The Ghanaian Medical and Dental Council launched the country’s national CME program in 2008. In 2010, Ghanaian physicians were required to earn a minimum of 15 credits per year from a minimum of three accredited CME activities (Ghana Medical and Dental Council, 2015). Organizations develop CME content and request CME accreditation for those courses through the Ghana Medical and Dental Council. In 2018, the following CME courses in hypertension, listed in the following Table 2.2, were accredited in Ghana.

Table 2.2

2018 CPD/CME courses on hypertension accredited by the GMDC

Organization	Title	Credits Awarded	Date
Medical and Surgical Skills (MSSI)	Hypertension Management (I-Treat to BP Goal)-Module 1	2	July 24, 2018 and July 26, 2018
Medical and Surgical Skills (MSSI)	Hypertension Management (I-Treat to BP Goal)-Module II	2	August 22, 2018 and August 28, 2018
37 Military Hospital	Hypertension	3	April 18, 2018
Africa Partners Medicine	Management of Hypertension	4	September 24-25, 2018 and September 27-28, 2018
Navrongo Health Research Center	Update on Management of Hypertension and Diabetes in Resource Constrained Areas	4	July 9-10, 2018
College of Health Sciences	Genetic, Hypertension, Diabetes and Herbal Remedies in Chronic Kidney Disease	7	September 26-28, 2018 and September 26-28, 2018
School of Medical Sciences, University of Cape Coast	Hypertension Symposium	4	December 20-21, 2018

Note. Ghana Medical and Dental Council accredited CME courses that included content on hypertension in 2018.

Of the approximately 402 individually accredited CME activities in Ghana (1,736 credits) provided by 82 different organizations, eleven courses (totaling 44 credits) specifically addressed

hypertension in the year 2018. The number of courses dedicated to hypertension was equivalent to the number of courses dedicated to research methods/scientific writing for that same year. Comparatively speaking, 10 CME courses in Diabetes occurred offering 30 credits. It should be noted that many medical schools, hospitals, and clinics conduct morning/clinical meetings that may include some clinical discussion around hypertension. This however is not explicitly known from the information reported by the Ghana Medical and Dental Council CPD accredited programs report for 2018.

Hypertension was identified by the U.S. Centers of Disease Control and Prevention – Ghana, as the second leading cause of death in 2016. The Ghana and the Ministry of Health of Ghana published clinical practice guidelines including hypertension and stroke in 2010 with revisions in 2017. Yet Ghanaian medical organizations who organize accredited CME for Ghanaian clinicians only provided seven (7) CME activities in hypertension in 2018. This represents less than two percent of the total courses offered (0.0174) and approximately two percent of the total credits awarded (0.0254) in 2018. Therefore, the review of these data suggests there is a disconnect between (a) the public health reported data, (b) the published clinical practice guidelines, and (c) the clinical content Ghanaian medical organizations choose to address in CME.

A limitation of the research is there was no data collection process in place at this time to determine the extent Ghanaian physicians access CME from sources outside of Ghana. Ghanaian physicians did have access to accredited CME from online sources and international meetings, however the use of these options was limited due to cost. Access to CME from outside Ghana may serve to expose Ghanaian physicians to new medical knowledge, however how those

physicians translate the clinical knowledge acquired through this CME into the culture and context of their practice environment needs investigation.

Further, medical knowledge is only one component of clinical practice. Communication skills, professionalism, and systems-based learning along with other components of clinical practice were less often addressed in CME content. Thus, most CME and most CME research focused on medical knowledge and translating said knowledge into clinical practice. As Schwartz, Soumerai, and Avorn stated in their 1989 survey of American physicians, these interventions seldom “address structural, social, and symbolic forces that promote nonscientific [clinical] practices among community physicians” (p. 577).

As a consequence of this traditional approach to CME, a linear framework model is created (shown in Figure 2.2) that many CME professionals use to develop education content. Pathman, Konrad, Freed, Freeman, and Koch (1996) outline the process to clinical guideline adherence. Pathman et al. (1996) state that:

there are sequential, cognitive, and behavioral steps physicians make as they comply with a guideline: physicians, who are initially unaware of a specific guideline, must first become *aware* of it, then intellectually *agree* with it, then decide to follow it in their practice (*adopt* it), then actually succeed in following it at appropriate times (*adhere* to it). (p. 874)



Figure 2.2. Awareness-to-Adherence Model. Adapted from “The Awareness-to-Adherence Model of the Steps to Clinical Guideline Compliance: The Case of Pediatric Vaccine Recommendations,” By E.D. Pathman, R.T. Konrad, L.G. Freed, A.V. Freeman, & G.G. Koch, 1996, *Medical Care*, 34(9), p. 873-889.

This widely used linear framework does not address the resource realities needed for guideline adherence. A physician may be aware, agree, and want to comply with guidelines; yet not have sufficient human, medical, or equipment resources to do so. Further, this linear framework focuses on physicians adopting their medical practice to meet the guidelines expectations as opposed to physicians adopting the guidelines to suit their medical practice.

The body of research of CME in Sub-Saharan Africa was limited, unlike the extensive body of literature concerning North American and European CME. However, of the known available research in Sub-Saharan African CME, it was primarily focused on knowledge acquisition and course format preferences (Kasvosve et al., 2014; Entsua-Mensah, Doku, & Adzamli, 2012; Desalu et al., 2011; Muula et al., 2004).

According to De Villiers (2000), “the ad hoc use of [CME], without predetermined assessment of the educational needs of the doctor, and with no evidence of learning, is a source of concern” (p.14). De Villiers (2000) conducted a descriptive cross-sectional survey of general practitioners CME utilization in the Western and Northern Cape of rural South Africa. The study findings focused on educational format preferences, clinical topic preference, and highlighted the lack of an educational needs assessment. De Villiers noted that given the geographical isolation of these physicians, they preferred to access CME that did not require travel such as “journals, medical representatives, and specialist reports” (p.14). The literature did not report on the use of CME for changing physician practice nor the clinical knowledge translation process as it related to the culture and context of the physicians practice environment.

Furthermore, the report described study participants as rural general practitioners in Western and Northern Cape provinces of South Africa but provided no other cultural or contextual information such as the prevalence of disease, socio-economic status of the patient

population, or access to various clinical resources in those geographic areas. De Villiers reported that study participants lacked interest in primary care content, however the literature did not identify certain control beliefs (self-efficacy) of these physicians. In identifying clinical topics of interest, the De Villiers' (2000) study findings did not include *why* physicians believe learning about certain clinical topics was more useful to their medical practice as opposed to other topics. One cannot determine from this study if the general practitioner participants believed themselves to be highly competent in primary care and deficient in certain specialized areas. Nor can one conclude what the physicians learning preferences meant for patient care.

These gaps in the South African study revealed themselves in Malawi as well. A cross-sectional descriptive study utilizing an interviewer-administered questionnaire was conducted in 2003 by Muula et al. (2004) and reported on physician access to CME in that country. The goal of the study was to identify the current state of CME within Malawi. Of the 57 participants in the study, only three (3) had access to the Internet. Two (2) of the 57 participants personally subscribed to medical journals. While these formats (online and printed journals) provided access to information and were two major avenues of CME globally, the most common CME offerings in Malawi were local workshops. Muula et al. (2004) suggested the addition of radio or television broadcasts to disseminate information to healthcare professionals.

While the goal of the study was to assess the current state of CME in Malawi, the report only identified existing CME educational formats and access to CME offerings. The report did not include a description of cultural or contextual factors such as whether Malawi has a medical school and thus produced its own physicians and served as a hub for medical education. The study also failed to report on public health priorities, the connection of CME to clinical outcomes, or the overall structure of healthcare in Malawi. The report instead focused almost

exclusively on the binary question of whether healthcare professionals had access to CME with no description of how CME courses were selected or how the knowledge acquired through CME was used in Malawi.

Like the South African and Malawi studies, a descriptive cross-sectional assessment utilizing a self-administered questionnaire of laboratory personnel in Botswana was aimed at documenting the self-reported educational interests of laboratory professionals. The study looked at course format and concluded that infrastructure issues such as poor internet connections made accessing online CME difficult. Kasvosve et al. (2014) identified topics for future CME offerings such as quality management and data interpretation. Kasvosve et al. (2014) reported differences between what the laboratory staff felt they needed to learn and what the laboratory supervisors felt their staff needed to learn.

They hypothesize this difference was due to staff looking at growth and the potential for future advancement, while supervisors considered the need to improve their laboratory's accuracy in testing. Here was a study that began to look at why clinicians may prefer certain CME content and thus the motivation behind selecting certain CME courses. This study also identified specific content for a specific specialized medical audience. However, there was no evidence reported on educational outcomes of CME and whether the content improved the performance of laboratory professionals. The findings did not include a discussion as to whether the CME content was congruent with the clinical environment and resources available in Botswanan clinical laboratories. Therefore, one could not conclude that the knowledge gained in CME was applied in the context of the Botswanan clinical laboratories.

A Kenyan study published in 2011 by Ndeti, Khasakhala, Mutiso, and Mbwanyo reported the knowledge, attitudes, and practices among general practitioners, both physicians and nurses,

in the care of mental health patients in Kenya. A large number of study participants reported being often unaware or uncertain on a number of indicators with 65% of physicians over 40 years of age indicating they were uncertain of general psychiatry knowledge. Ndetei et al. (2011) report that “this study therefore provides evidence for the high potential for CME related to mental health for all professionals regardless of their age, working in general medical facilities in Kenya and by extension other socio-economically similar African countries” (p.235). Unlike the previous Sub-Saharan African CME studies reported in this literature review, the Kenyan study provided a deeper analysis into a specific clinical area. However, it was still an educational needs assessment and did not discuss clinical practice guidelines or best evidence in detail.

As an in-depth educational needs assessment related to mental health care, the study did take into consideration culture, context, and attitudes (beliefs) of medical professionals toward mentally ill patients and their role in caring for these patients. There was some discussion of cultural beliefs associated with mental health and the stigma associated with mental health conditions. This study did not directly use the theory of planned behavior as its theoretical framework, however, it did focus on attitudes and beliefs of primary care workers and how those attitudes and beliefs may impact the workers’ clinical behavior. The Ndetei et al. (2011) study called for the use of CME to address the identified knowledge gaps in mental health care as described in the findings of the study. However, an opportunity could be missed if the CME content focused solely on increasing medical knowledge without incorporating the primary care workers attitudes, beliefs, and cultural context into the CME content.

The study by Mock, Quansah, Addae-Mensah, and Donkor (2004) was one of the few CME studies for Sub-Saharan Africa with educational outcomes. The goal of the study was to assess the effectiveness of a CME accredited trauma course held at the Kwame Nkrumah

University of Science and Technology (KNUST) in Kumasi, Ghana. The 40-hour trauma training course was similarly developed to the American Advanced Trauma Life Support (ATLS) course as teaching methods were adapted and used. Importantly, while this course was based on the U.S. ATLS course, it was designed with considerations of the clinical environments of rural physicians. This was one example of taking culture and context into consideration when designing a CME activity. The target audience for this course was general practitioners, particularly in rural areas of Ghana. The cost of the week-long course was covered by the Ghana Ministry of Health and participants needed to cover the costs of their own travel (Mock et al., 2004).

Pre and post tests were conducted along with a post course survey, and post course interviews of course participants were conducted one year after course completion. Mock et al. (2004) recognized the omission of patient outcomes was a limitation of this study and follow-up with participants was a challenge. The results of this study showed an increase in medical knowledge regarding the management of trauma. The follow-up interviews pointed to the need for a national trauma system. Pre and post test data showed a change in competency. Post course interviews indicated some participants were able to perform certain procedures they had not done before the training - indicating a change in practice.

Limited follow up in this study meant that one is not able to ascertain to what degree study participants successfully translated clinical knowledge from the trauma course into their clinical practice. This study also did not mention how the ATLS course was modified to address the rural clinical environment in Ghana. In the diabetes study by Kolling et al. (2010), diabetes care in Tanzania was very poor despite the Unwin et al. (1999) project modifying the British diabetes guidelines based on availability of certain medications, medical specialists, and

equipment. The Kolling et al. (2010) and Unwin et al. (1999) studies showed that modifying/customizing content did not always result in improved clinical outcomes. Omitting how the ATLS course was changed leaves out meaningful information that may have contributed to a better understanding of how or why physicians did or did not change their practice behavior(s). This is a clear example of what McNutt and Livingston (2010) cautioned against when they urged studies to include contextual details.

Culture, contexts, and beliefs were central to the Achonduh et al. (2014) cluster based randomized trial study published in Cameroon, which provided exquisite detail on how culture and context were painstakingly incorporated in the design and deployment of trainings for health care workers concerning the diagnosis and treatment of uncomplicated malaria. This research study best demonstrates a comprehensive, culturally focused approach to incorporating clinical practice guidelines into practice via educational interventions including CME in Sub-Saharan Africa.

In this study, the underlying issues in the management of malaria included the over-diagnosis, varying prescription practices, and disease management were identified. Researchers identified a lack of adherence to national Cameroon guidelines for the diagnosis and treatment of malaria as an issue affecting patient outcomes. Achonduh et al. (2014) developed the study to assess the potential effectiveness of creating two specific health professional training programs – a basic training and an enhanced training. The basic course was designed to be more pragmatic, while the enhanced course was designed to change clinician behavior and improve knowledge. Each facility in the study was provided with educational materials which they kept in order to cascade training to others.

Achonduh et al. (2014) research design included a literature review of the current state of malaria care in Cameroon, policy dialogue, and engagement with clinical content experts and cultural experts were incorporated into the various phases of research and instructional design. Formative quantitative and qualitative research methods were used including focus groups and in-depth interviews (Achonduh et al., 2014). To change clinical practice behavior, cultural experts - local dramatic actors and artists were used to help develop educational interventions to enable clinicians to become more comfortable with complying with clinical practice guidelines. This included “case studies, card games, testimonials, picture scenarios, self-developed participatory drama” (Achonduh et al., 2014, p 6). As a result of the multi-faceted, multi-tiered approach, 92% of basic training and enhanced training participants indicated it is inappropriate to prescribe anti-malarial medications for patients with a negative rapid diagnostic test.

The Achonduh et al. (2014) did provide sufficient detail which provided readers of the study with an understanding of the time-consuming process used by the research team to meaningfully include culture, context, and their resulting beliefs into the design of CME content. Additionally, given the high level of complexity of healthcare systems, CME such as the courses developed in the Cameroon study comprise one of many interventions targeted at addressing the malaria epidemic in Cameroon. The research highlights the importance of participatory process in developing educational content as well. The study did not include patient outcome data.

However, given the significance of the malaria epidemic, the World Health Organization (WHO) closely monitors malaria cases. While other factors such as global financing for public health projects, and other unreported interventions undoubtedly contributed to the overall patient outcomes, as seen in Figure 2.3, there was a notable decrease in deaths in patients who were admitted to clinics for medical care for malaria.

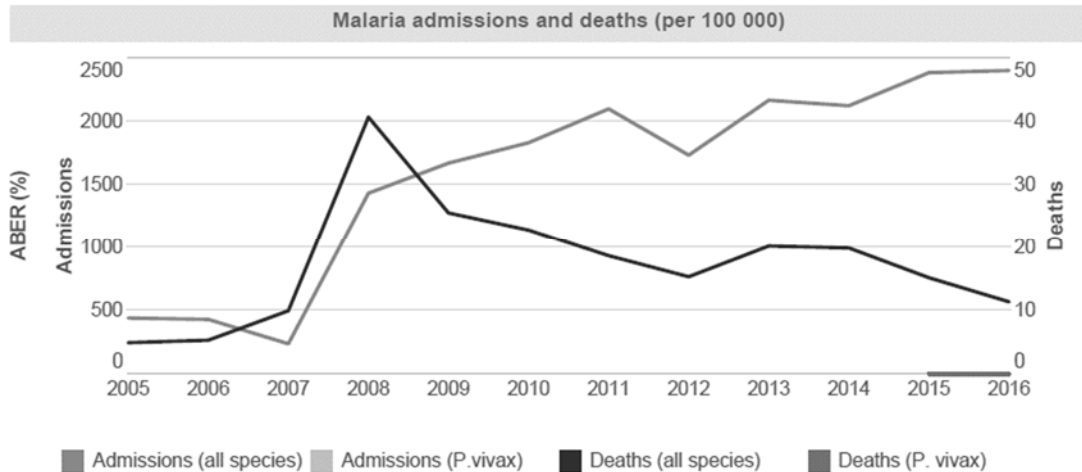


Figure 2.3: 2016 WHO Cameroon Malaria admissions and deaths (per 100 000) by the World Health Organization, 2017, Copyright 2017 by the World Health Organization.

Each of the Sub-Saharan African CME studies contained within this literature review expressed the critical value of CME for African healthcare workers. While significant research exists on the effectiveness of CME in clinical knowledge translation and changes in physician behavior in the United States, Canada, and Europe; CME research on the African continent is limited with multiple reports showing traditional CME outcomes of improved knowledge and the need for more education. However, none of the studies reported changes in physician practices which could lead to improvements in patient care (Kasvosve et al., 2014; Entsua-Mensah, Doku, & Adzamli, 2012; Desalu et al., 2011; Muula et al., 2004).

Except for the Achonduh et al. (2014) study, most known CME published research concerning the African continent focused on format (workshops, journal, online), topics of interest, and knowledge acquisition. The Mock et al. (2004) study did report a change in medical knowledge, however poor participant follow-up prohibited researchers from identifying changes in the participants' practice behaviors. The Achonduh et al. (2014) and Mock et al. (2004) studies are the only known studies to contain findings related to educational outcomes.

International thought leaders in CME, such as the World Federation for Medical Education, The Society of Academic Continuing Medical Education, The World Health Organization, and the United States Agency for International Development (USAID), all purport that CME must be meaningful to the learner and relevant to their practice of medicine. Therefore, CME designers who do not incorporate the learner's cultural beliefs and context of their medical practice into CME content may find CME to be ineffective at changing physician behavior.

CME is still considered a prevailing channel for clinical knowledge translation. Multiple studies have concluded that knowledge acquisition alone is not sufficient in changing clinician behavior. Regarding the implementation of clinical practice guidelines, there is no known study in the literature of the influence of physician's beliefs on clinical knowledge translation in Sub-Saharan Africa. This creates a gap in the literature and the need for an investigation into other aspects of CME, including physician beliefs concerning practice behaviors. Therefore, in an effort to develop and deploy CME interventions that improve clinical practice, research studies supported by theory are needed to investigate how physician beliefs influence clinical knowledge translation.

Clinical Knowledge Translation

Evidence-based clinical practice guidelines are a fundamental aspect of and represent optimal medical practice for physicians and other members of the care team (Harrison et al., 2013). Thus, dedicated public and private sector resources including, but not limited to funding, hosting clinical data registries, and convening of subject matter experts; continue the development, deployment, and surveillance of clinical guideline adherence. However, Harrison et al. (2013) claimed that having clinical practice guidelines were not sufficient by themselves to

ensure the practice of evidence-based medicine. Complexities of culture and context in clinical practice coupled with the substantial variability of clinical settings across the globe created a number of challenges for guideline adherence and the need for effective clinical knowledge translation. As Rashidian, Eccles and Russell indicated, “in reality, many guidelines have no clear implementation plans. Evaluation of guideline implementation programmes involves careful planning and requires dedicated resources” (2007, p. 149).

This became critical as reported in *Systematic Reviews and Knowledge Translation*, because as Tugwell, Robinson, Grimshaw, and Santesso (2006) stated, “although proven effective interventions exist that would enable all countries to meet the Millennium Development Goals, uptake and the use of these interventions among the poorest populations is at least 50% less than among the richest populations within each country” (p. 643). This finding highlights that fact that context is not only country specific, but community and socio-economic status is specific to knowledge translation as well.

For years, one of the primary implementation strategies has been disseminating clinical practice guidelines, with and without knowledge translation, via continuing medical education. The physician’s uncertainties concerning how, why, and when to implement clinical practice guidelines complicates CME and knowledge translation efforts further. Landry, Amara, Pablos-Mendes, Shademani, and Gold (2006) define *knowledge* as “information whose certainty is context-dependent and that gives individuals and organizations the capacity to act” (p. 598). In clinical medicine, the function of knowledge is to do something with it, to behave in a certain way in order to improve patient outcomes. In the context of my study, understanding the knowledge contained in the Ghanaian hypertension guidelines, what physicians believe to be true about that knowledge, and why physicians do or do not use that knowledge will be key to

unlocking the dearth of CME as applied to hypertension diagnosis and management by primary care physicians in Ghana.

Knowledge is created, according to Landry et al. (2006), first by looking at the context of medicine and then deriving data from it. Landry et al. (2006) claimed that knowledge transformation “allows individuals and organizations to develop instruments to represent, collect, record and store discrete facts about reality” (p.598). Data which are the base of the knowledge hierarchy are transformed into information as part of the scientific process are essential to basic science, clinical research or quality improvement processes. These process investigations are then transformed into knowledge, which is sometimes referred to as translational research. Landry et al. (2006) report that translation allows individuals and organizations to interpret their own information in their own way in order to derive actions pertinent to their needs. It should be emphasized that each step of the knowledge creation process is context specific.

Of particular concern to my study is Landry et al.’s notion of knowledge incompatibility. Landry et al. (2006) state that knowledge incompatibility “arises when knowledge producers or intermediaries attempt to transfer to organizations or communities knowledge that is not compatible with their mission, historical context, values, skills, resources and prior investments in technologies” (p. 599). Therefore, if physicians believe that practice guidelines are incompatible with the culture and context of medicine in Ghana, they are less likely to adapt those guidelines into practice. Knowledge incompleteness also hinders translation as well. If physicians believe certain information is missing, that there are gaps in the process, this creates issues. There are no known studies about Ghanaian physicians’ beliefs as to the completeness of the hypertension guidelines. Such an investigation could shed light on why the guidelines are or are not adhered to.

The World Health Organization (WHO) published a special bulletin focused on knowledge translation in Global Health. In that bulletin four dimensions for clinical knowledge translation and decision-making were outlined. In the first dimension, the WHO bulletin's author Chunharas (2006) states "researchers need to be aware of the knowledge that is available from other sources and also the perceptions and preferences of those making use of the knowledge" (p. 654). The second dimension for clinical knowledge translation Chunharas (2006) outlined was the context in which decisions are made. Chunharas purports that understanding the context contributes to understanding how the knowledge translation process should occur within that context.

The third dimension in knowledge translation is the nature of the knowledge itself. The knowledge should be evidence-based, explicit, and as scientifically sound as possible. "Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett, Rosenbery, Gray, Haynes, & Richardson, 1996, p.312). Chundaras (2006) cautions that, "certain situations may favour the use of personal knowledge and experience, knowledge from trusted sources or knowledge about perceptions and preference of key stakeholders, who may not be representative of the population" (p.655). This tacit knowledge developed over years of clinical experience, peer and patient interactions; create a body of knowledge derived from the culture and context of the physicians' clinical practice. Chunharas (2006) continues by stating, "researchers may claim to have the best quality knowledge, but it may not be cost effective to try to improve the quality of knowledge in a complex decision-making process when time is important and other sources of knowledge exist"

(p. 655). This is important to note because Ghanaian physicians are managing the care of hypertensive patients and have culturally and contextually relevant (tacit) knowledge pertinent to patient care and compliance with explicit knowledge of their own.

The last of the four dimensions for knowledge translation according to Chunharas (2006) is the process of knowledge translation for which he claims, “there is no single pathway or model by which knowledge is translated to guide decision-making” (p. 655). What is interesting here is that unlike Pathman et al. (1996) who describe the linear model of awareness-to-adherence, Chunharas argues that knowledge translation is not a linear process. As Chunharas points out:

The linear model may hold true for research that is to be disseminated among research or academic communities, whose aims are to look for the better and more refined knowledge. But it will not work in the setting of health service management, where the urge for action calls for the use of any type of knowledge and where research studies may not necessarily provide the more relevant and timely knowledge. (p. 655)

In 2014, Thomas, Menon, Boruff, Rodriguez, and Ahmed published *Applications of social constructivist learning theories in knowledge translation for healthcare professionals: A scoping review*. The review states, “there is a clear need for future targeted research, as researchers and practitioners grapple with identifying and addressing the complex interaction of individual and contextual variables that play a key role in clinical practice” (p. 17). In this scoping review, Thomas et al. (2014) identified five themes within the research that used social constructivist theory in knowledge translation. The first theme addressed the tension between research and practice which was reflected in nine papers. The second theme derived from 14

papers used social constructivism to understand how knowledge is gained and used in clinical practice as well as individual and context factors that influence behavior. The third theme was identified in only one paper and focused on promoting professional expertise.

Two papers comprised the fourth theme of understanding the patient experience, and the last theme, consisting of nine papers, identified the design of interventions targeted to change knowledge, skill acquisition, and behavior. Thomas et al. (2014) found this last theme to be the most important, as it represents an educational best practice. Thomas et al. claim that “indeed, relying on constructivist assumptions to support the design of [knowledge translation] interventions designed to foster changes in knowledge, skills, attitudes and behavior is a practice that is strongly advocated” (p.17).

Summary

This literature review examined certain key culture and context components that contribute to the prevalence of hypertension in Ghana including food scarcity, diet, tobacco use, cultural concepts of beauty, and herbal remedies. Next, the impact of the current environment of medical pluralism in Ghana with an examination of the cultural tensions between Western medicine and TACM was presented. Finally, this chapter discussed a consideration of incorporating culture and context into CME to facilitate improved clinical knowledge translation in order to improve patient care. Insight into these issues bridges the gap in CME literature by (a) providing evidence to support culturally relevant content development and dissemination strategies; and (b) the disconnect(s) in the deployment-to-adherence process of clinical knowledge translation.

Chapter Three: Methodology

Much of the literature for continuing medical education (CME) in Africa was focused on course format, topics of interest, and knowledge acquisition, rather than other aspects that influence clinical behavior. Therefore, the purpose of this qualitative study was to identify themes regarding Ghanaian PCPs beliefs' and whether such beliefs influence clinical knowledge translation of Ghana's hypertension clinical practice guidelines into the care of adult patients.

Healthcare organizations, medical specialty societies, and government organizations have implemented several strategies to improve upon low adherence to practice guidelines, including the addition of pay incentives for guideline compliance, redesigning electronic health records to improve tracking of data, and CME (Straus, Tetroe, & Graham, 2009). However, despite these incentivizing strategies, a significant disconnect exists between the development and deployment of clinical practice guidelines and their use in everyday clinical practice.

The culture and context of clinical practices is complex, contributing to substantial variability around adherence in clinical settings globally in the manner that clinical knowledge transitional is actualized by practitioners. While it is difficult to measure physician beliefs quantitatively, interpretive studies serve to enlighten the field as they are context-bound (Merriam & Tisdell, 2016) affording an opportunity to feature medical practitioner beliefs in the context and with relationship to the local environment such as that of Ghana.

Rationale for Interpretive Qualitative Study

Cultural beliefs heavily influence clinical practice. As such, physician beliefs regarding utilizing clinical practice guidelines for hypertension in their practice of medicine, and their perceptions of how clinical care occurs in their practice were central to this study. This study did not aim to predict behavior, nor change behavior, but rather to explain and examine the impact of

beliefs held by physicians on their medical practice behaviors. Behavioral, normative, and control beliefs as described by the Theory of Planned Behavior (TPB), represent conceptual missing links which would benefit from an interpretive qualitative study, particularly, a study focused on listening and culling data from a specific culture-sharing group that investigates aspects of clinical practice that are not easily measured (Creswell, 2018).

Merriam and Tisdell (2016) stated that “qualitative researchers are interested in understanding how people interpret their experiences, how they construct their worlds and what meaning they attribute to their experiences” (p. 6). This study’s methodology, as part of qualitative analyses, sought to describe the meaning behind clinical knowledge translation of its participants. Specifically, the phenomenon of interest was how physician beliefs may be related to the disconnect between published practice guidelines and actual clinical practice. This qualitative methodology employed the use of semi-structured interviews. More specifically, thick descriptions of clinical practice experiences were collected and assessed with reference and deference to participant-based culture and contexts via the participants’ own words.

Using the TPB as the theoretical framework within an interpretive qualitative study provided an opportunity to deep dive into specific aspects of beliefs across three categories: behavioral, normative, and control beliefs. In doing so, the study offers a detailed description of Ghanaian primary care physician beliefs and an analysis of themes to determine a deeper understanding of physician beliefs and the impact on clinical knowledge translation.

Constructivist - Interpretivist Paradigm

An interpretive methodological approach allowed for the consideration of how personal beliefs were constructed via multiple realities (Merriam & Tisdell, 2016). Ponterotto (2005) stated that constructivists claim reality is constructed within the minds of individuals. For the

researcher using the constructivist paradigm, he or she co-constructs meaning collaboratively with the research participants. The TPB complements this ontological paradigm by investigating the beliefs derived from the underliers of TPB, such as behavior. Interpretivist researchers then, seek to uncover the multiple realities participants hold and experience within clinical settings (Ponterotto, 2005).

Furthermore, constructivism–interpretivism has goals that are idiographic and emic in nature (Ponterotto, 2005). In this context, the constructivist-interpretivist approach is idiographic in that the understanding of actions taken around the implementation of clinical practice guidelines was related to particular scientific facts and processes (evidence-based medicine); while it is also emic via the investigation of cultural components; specifically the culture of medical practice in Ghana and how these cultural components were expressed and demonstrative in the shaping and influencing of physician beliefs which in return were key to clinical knowledge translation.

Assumptions

One of the assumptions of constructivism is that the concept of truth “is a matter of consensus among informed and sophisticated constructors, not of correspondence with objective reality” (Patton, 2015, p. 123). In this study, what primary care physicians believed to be true about how to best care for hypertensive patients was in part derived from consensus among physician peers (normative beliefs in TPB) and not solely based on reading a guideline document.

A second assumption of constructivism claims that what constitutes facts “have no meaning except within some value framework, hence there cannot be an ‘objective’ assessment of any proposition” (Patton, 2015, p. 123). Here again, in this study, an investigation into what

facts physicians believed to be accurate about guidelines and hypertensive patients within the context of their medical practice was conducted. This paradigm allowed for inquiry into whether physicians believed the underlying evidence or facts on which hypertension guidelines were based (Behavioral beliefs in TPB).

The third constructivist assumption claims that “causes and effects do not exist except by imputation....” (Patton, 2015, p. 123). Diseases are complex. Hypertension often comes with other co-morbidities making management of the disease more complex. This assumption lent to this study by examining how beliefs may have influenced a physician to behave in one manner or another, based on what they perceived the clinical outcome to be.

Next, constructivism assumes that “phenomena can only be understood within the context in which they are studied” (Patton, 2015, pp. 123-124). The context of clinical practice varies significantly within countries and across the world. Resources physicians have access to in terms of clinical knowledge, technical support, clinical support, medications, and equipment vary widely. While the Rashidian et al. (2007) study of primary care physicians in the UK identified underlying beliefs that were relevant to their specific context of medicine in the UK, these same results do not necessarily reflect the beliefs of physicians practicing medicine in Ghana.

Lastly, constructivism assumes that “data derived from constructivist inquiry have neither special status nor legitimation; they represent simply another construction to be taken into account in the move toward consensus” (Patton, 2015, p. 124). Consensus of meaning is a moving target and warrants study. Patton (2015) examined the work of Thomas Kuhn as Kuhn described communities coming to consensus. According to Patton, Kuhn argues that people are organized by certain traditions, practices, or beliefs. Occasionally, the constructs of organizations are challenged (for example, new drugs, new technology, and new techniques) and old ways of

thinking no longer work. New meanings are constructed, and a new consensus is created (Patton, 2015).

This ontological interpretation holds that participants' reality is subjective, therefore, influenced by culture, context, and medical experience (Ponterotto, 2005). Additionally, the constructive-interpretivists axiology is that the researcher's own world view and perceptions cannot be segregated from the research (Ponterotto, 2005) and should not be ignored or dismissed, but recognized, documented, and managed. Thus, reflexivity which "generally refers to critical reflection on how researcher, research participants, setting and research procedures interact, and influence each other" (Glesne, 2016, p. 145) were incorporated into the study.

Research Questions

The central research question for this study was: How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?

Sub-questions included:

1. How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to cultural and contextual belief systems that they hold?
2. How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?
3. How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?

Design Considerations

The overall research design was an interpretivist study of primary care physicians in Ghana who have had exposure to the Ghanaian hypertension guidelines as published in 2010 or 2017 by the Republic of Ghana Ministry of Health *Standard Treatment Guidelines, Sixth Edition*

and the seventh edition. This study was conducted in accordance with The University of Wisconsin-Milwaukee Institutional Review Board and assigned protocol #19.033. This research employed a binary approach: use of interviews and follow-up interviews with primary care physicians who have read the hypertension guidelines. Initial interviews began in October of 2018 with follow-up interviews no less than one month later.

Research Site

The research was conducted using WhatsApp. However, to provide potential study participants exposure to the Ghana hypertension guidelines and begin the participant recruitment process, a hypertension course which included local clinical practice guidelines was accredited by the Ghana Medical and Dental Council and offered in two rural communities of Wenchi and Ankaase, Ghana. These communities each have hospitals located within them and were selected based on my previous experience working with the hospital administrators and Chief Medical Officers at both sites. Ankaase is within a reasonable driving distance from Kumasi, which is the second largest city in Ghana. Wenchi is further north and west in Ghana, which allowed participants from northern regions more access to the education because they needed to travel a significantly shorter distance to attend the course.

Confidentiality

Participant confidentiality was maintained by me as I was solely in charge of the data gathering and interpretation. Pseudonyms were assigned to each participant and the list of pseudonyms was secured separately from the actual names of participants. Once the analysis was finalized, the list of real names was destroyed. All data were reported using the pseudonyms or as aggregated themes.

Sampling and Sampling Rationale

Principle-focused sampling was used to select 10 primary care physicians (PCPs), including general medical officers, general internal medicine and family medicine physicians practicing full time in Ghana. The use of principled-focused sampling as described by Patton (2015) allows for the following:

principles provide guidance and direction for working with people in need or trying to bring about change. Principles, unlike rules, involve judgement and have to be adapted to the context and situation. Principle-focused sampling identifies cases that illuminate the nature, implementation, outcomes, and implications of principles. (p. 270)

Patton (2015) gives the example of principle sampling of homeless youth and staff who work with the youth, focusing on “generating and analyzing evidence of the meaningfulness and effectiveness of these principles” (p. 270). Patton claims that principle-based sampling is effective in situations where diverse groups are all adhering to the same principles. In this study, physicians from diverse clinical settings that had varying access to medical equipment, medications, medical personnel, and electronic medical records were selected. Despite the diversity in clinical settings, all participants were expected to adhere to the same principles, specifically clinical practice guidelines. However, as Patton explains, differentiation in adherence to principles is largely based on the participants’ context (Patton, 2015). Patton defines a principle as “a fundamental proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning” (p. 292). This was critical to this study as an investigation of beliefs that influence behaviors.

The methodology of principle-focused sampling was used to select PCPs and focus on generating and analyzing the effect(s) of beliefs on clinical knowledge translation. In collaboration with Africa Partners Medical - a nonprofit organization, a CME accredited hypertension course was created. Development of this course served as a recruitment tool for Ghanaian physician study participants and help ensure that participants had exposure to the Ghanaian hypertension guidelines. It was not a requirement of this study that participants attend this specific hypertension course. Course advertising materials included a statement about the study and a statement to recruit participants. Additional recruitment was done through my personal LinkedIn® contacts with Ghanaian physicians.

Inclusion and Exclusion Criteria

PCPs which include the medical specialties of family medicine physicians and general internal medicine physicians, and medical officers who practice full time in Ghana were eligible for participation in this research. Specialists such as emergency medicine physicians and pediatricians were excluded from the study. Further, physician assistants comprise a significant percentage of the primary care workforce. However, this study focused on licensed medical doctors and therefore physician assistants were excluded from this study as their training is notably different from medical doctors. Ghana does have a population of female physicians and surgeons in various specialties Therefore, men and women were included in the sample. Further, given the medical education system in Ghana, I anticipated that most of the sample primary care physicians would be junior physicians who were completing their housemanship rotations or compulsory service.

Data Collection

Each physician participant was asked to state their medical specialty, then I described the study and invited them to participate. Consent was obtained by me and there were no costs for participating in the study. Data collection commenced after the informed consent process was completed and forms collected in person or online using the UWM Qualtrics system. Individual interviews using WhatsApp began in October 2018. Follow-up interviews were conducted no less than one month after the initial interview. Using a binary methodical approach of initial one-on-one interviews with follow-up one-on-one interviews allowed for deep reflection upon one's beliefs and increased data validity according to Ponterotto (2005).

Documents

The only document used in the execution of this methodology was the Republic of Ghana, Ministry of Health *Standard Treatment Guidelines, Sixth Edition*, published in 2010 and the seventh edition, published in 2017 (See Appendix A). This included Ghana's clinical practice guidelines for hypertension. No other documents were part of this study. The guidelines were included as a PDF file provided via email or WhatsApp to all interview participants prior to the initial interview.

Data Collection Tools

The data were stored on a password protected personal computer in my home. Interview questions for individual interviews are included in Appendix B. Interviews were conducted using WhatsApp and recorded using a hand-held digital recorder. Each participant interviewed was engaged with questions and responses for approximately 60 minutes.

Data Analysis

I transcribed all interview recordings. To protect the authenticity of the study, it was important that each physician's voice be clearly heard as recorded. Once the data were transcribed, thematic analysis was used with line by line coding of the data. Thematic analysis “is a method for identifying, analyzing, organizing, describing, and reporting themes found within a data set” (Nowell, Norris, White, & Moules, 2017, p. 2). The first round of coding was based on the research questions and the labels from TPB. Data were coded based on TPB behavioral, normative, and control beliefs. Figure 1.2 as the starting point for the development of coding labels. Table 3.1 provides a sample of initial coding.

Table 3.1

Theory-based initial coding sample

Code	Transcript Excerpt
Norm	At the hospital we have senior colleagues there, all who have a specific way of managing hypertensives, and we are taught to follow that.
Attitude	I think it takes too long to update . I don't know why it takes us 3 to 5 years to update our guidelines. Like in Ghana, we have the standard treatment guidelines every 3 years, but they are writing and updating BNF every 6 months or so. The question is, how many people have even seen it? And those have, how well are they using it? Not everybody uses it
Control	(MedScape) Yes, because it gives me much information and gives me more options as compared to the other research that's available. So what I try to do is, I always update my knowledge through lecture videos or read anything that is interesting when I come across it.
Background	Well, usually I have patients asking me if they can take the herbal products in conjunction with the orthodox medicine.
Control	But what I told them is I am not sure about the composition and the drug consequence of those medications and how they can interact with their BPs.
Control	And so for me, personally, I advise them that they should stop taking those herbal medications and stick to what has been tried and tested and gone through all the experiments and all the drug trials. That's what I tell them. I am very careful , I don't encourage them to mix the herbal and the orthodox medicine.
Background	But some of them obviously will do that. Our problem here is that when they are on the herbal medications , they will stop taking the orthodox medicines.

Attitude	You know, when a patient comes with a stroke, usually the first thing you do is determine if the stroke is infarctive or hemorrhagic using a CT scan.
Background Control	But usually the patient doesn't even have the money to do the CT scan.. So instead of sending the patient to do the CT scan just to find out whether the patient as a hemorrhagic or infarctive stroke, sometimes you just try to manage based on their clinical presentations and their symptoms.

Subsequent rounds of coding were developed in the direction of the data and contingent upon physician participants' voices. Codes such as CoC for the 'cost of care' began to emerge as did the code for 'local research' as participants described their experiences. Additionally, CmapTools (also password protected) was used to create a concept map per participant interviewed. Following the creation of the concept maps, the maps were collated and compared to the coding.

This research was expected to create patterns representing overall themes resonant of PCPs' beliefs, therefore in order to produce these patterns of response, multiple cycles of coding were required. This analysis process allowed for the identification of patterned behavioral and cultural themes that may explain how primary care physician beliefs were determined and influenced their clinical knowledge translation process. Similar to the study by Rashidan et al. (2007), interviews of primary care physicians in the United Kingdom identified participants' beliefs concerning the credibility around guidelines, beliefs in the complexity of the disease being treated, and beliefs about the simplicity or complexity of the guidelines as major themes that influenced the implementation of guidelines. While Ghana is a former colony of the United Kingdom, the culture and context of the practice of medicine is significantly different. Thus, a specific analysis for Ghana was warranted. Even though the target population for this study was primary care physicians, it is expected that the methodology used in this research could be applicable to other medical specialties and diseases beyond hypertension.

Quality Control

As a constructivist, triangulation not only adds trustworthiness to the study, but also allows for the capturing and reporting of “multiple perspectives rather than seek a singular truth” (Patton, 2015, p. 684). Using the constructivist paradigm, I expected that multiple beliefs concerning clinical knowledge translation by Ghanaian PCPs would be revealed. I cross-referenced the data from the initial and follow-up interviews to confirm themes and identify pattern differences within and between the collected data. It was important to understand the differences across the data collected (Patton, 2015).

Triangulation was further used as a tool for cross-checking the interview responses, and to further categorize, specify, define, and tease out any potential inconsistencies or patterns of replication which would lend themselves to nuance or deeper understanding around the research topic. Credibility was further enhanced in this study with peer debriefing which was conducted with a Ghanaian general internal medicine physician and a Ghanaian family medicine physician who served as a second validator and verifier of coding and accuracy.

In terms of research transferability, the outcomes of this research were context dependent; therefore, the findings are unique to primary care physicians who practice medicine in Ghana. The transferability of findings may apply to clinical practice guidelines for other diseases and medical conditions including but not limited to Type II Diabetes Mellitus within the primary care practice in Ghana. In addition, knowledge translation studies conducted in Ghana or other specific Sub-Saharan African countries are often used by and generalized to other Sub-Saharan countries. However, at the time of this study, many of these countries did not have the medical school infrastructure and residency programs that Ghana had, and many did not have

clinical practice guidelines for hypertension (Dzudie et al., 2017). It was my goal to provide thick descriptions to make transferability more feasible (Merriam & Tisdell, 2016).

Reflexivity in this methodology will be captured via the documentation of reflections during the course of various research interactions and via the data analysis and observations contained within the Midori Traveler's notebook. This includes an investigation of my own bias and privilege as to how these elements interact with the research process. Growing up in the United States and matriculating through the K-12 education system in the U.S. means that I have been raised to perceive Africa more as a country than a continent of 54 sovereign nations. Like many, I was taught that other than the plow and Egypt, Africa had contributed nothing to the world.

However, once an adult, I became curious about Africa and took it upon myself to learn more about the continent and the countries that comprise Africa. In doing so, I was able to emancipate my mind from the stereotypical biased lessons learned in childhood. Traveling to Ghana for the past four years for work related medical education projects have given me the direct experience with the culture, the healthcare system, and the people and the rich heritage of the country. However, I had to be mindful of the positionality as an American and how that influenced my interactions with study participants.

Research Timeline

The IRB protocol #19.003 was approved in August, 2018. The Methodist Hospital System in Ghana has an ethics board via each hospital for research. I collaborated with each site that held an Africa Partners Medical hypertension course to obtain ethics board review and approval. The Africa Partners Medical CME hypertension courses took place in September 2018. African Partners Medical (APM), is the local organizing group and host organization for the

hypertension course. APM took part in promoting the course, recruiting and registering course attendees. The courses were offered in Wenchi and Ankaase, Ghana. Immediately after the course, volunteer participants for follow-up interviews were recruited.

Upon returning to the United States, I began scheduling the initial interviews with Ghanaian participants, however, given the low number of primary care physicians who attended the courses, an IRB amendment was submitted and approved to expand recruit to include the use of my LinkedIn® contacts. Recruitment continued until 10 participants were consented. When possible, interviews were conducted using WhatsApp in the UWM Library interview recording room. Otherwise, I conducted interviews in English via WhatsApp from home.

Transcription of findings and coding began after initial interviews were conducted. Concept maps were constructed after the initial interview and revised with the follow-up interview. As the findings may impact the interview questions, I reviewed interview questions and instruments. All transcriptions were reviewed for accuracy. Finally, in January 2019, I completed the analysis and conclusions for this chapter of my doctoral research.

Summary

This chapter outlined the methodology employed to investigate how the beliefs of primary care physicians in Ghana influenced their clinical knowledge translation process when caring for adult patients with hypertension. A qualitative approach was chosen to capture the stories and experiences of physician participants. Principle-sampling allowed for a focus on identifying physicians from various backgrounds who all attempt to follow the same principles, in this case, clinical practice guidelines for hypertension. The goal of the initial and follow-up interviews was to unearth beliefs in the form of overarching themes that influence the clinical knowledge translation process.

Chapter Four: Findings

The findings of this study identify underlying themes of Ghanaian primary care physicians' beliefs and whether said beliefs influence clinical knowledge translation of hypertension clinical practice guidelines into the care of adult patients. Identified themes contribute to answering the question: How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation? Sub-questions include:

1. How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to the cultural and contextual belief systems that they hold?
2. How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?
3. How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?

Principle-focused sampling was used to select 10 primary care physicians, including general medical officers, general internal medicine physicians, and family medicine physicians practicing full time in Ghana. Each participant gave consent and was scheduled for two interviews using WhatsApp. The interviews focused on developing an understanding of each physician's beliefs when it came to incorporating culture, context, and guidelines into their management of hypertensive adult patients. Interestingly, results from the initial and follow-up interviews show participants did not report any changes to their management of hypertension or where they go to seek information on hypertension. Therefore, the findings presented here represent an aggregate of both initial and follow-up interviews.

According to the Theory of Planned Behavior (TPB), background factors influence behavioral, normative, and control beliefs that, in turn, influence a person's intention to perform

a behavior and thus the actual behavior. Utilizing TPB, background factors considered included patient population characteristics, culture, and context in which the physician participants work; their gender; medical education; specialty; years in practice; health sector; and clinical setting. These background factors influenced the participants' attitudes toward the management of hypertension, the complexity of their patients' health, locally derived clinical evidence, and patient compliance. Background factors influenced participants' normative beliefs regarding other healthcare professionals, consulting senior colleagues, the need for interprofessional continuing medical education, and community education.

Additionally, the background factors influenced participant control beliefs, or self-efficacy, such as the participants' ability to control blood pressure according to guidelines, maximizing care for patients who cannot afford healthcare, determining which evidence-based information to use and what patients still needed, selection of CPD courses, and how to best educate patients. The findings from this study suggest that the most prominent background factor that influences how physicians' beliefs affect clinical knowledge translation is their patient population. Thus, when it comes to this research into Ghanaian primary care physician participants' lived clinical experiences translating clinical knowledge into practice, they believed this process is influenced by (a) highly clinically complex patients, (b) the cost of medical care, (c) local guideline applicability to other healthcare professionals and not doctors, (d) a lack of locally produced evidence-based research, (e) supplemental CPD that addresses gaps in the guidelines, and (e) patient education.

Participant Background Factors

The use of the Theory of Planned Behavior includes the identification and consideration of background factors. Five of the participants were general medical officers, three were general

internal medicine physicians, and two were family medicine physicians. All the physicians were Ghanaian and practiced medicine full time in Ghana. Table 4.1 represents the identified background factors of the physician participants.

Table 4.1

General background factors of physician participants

Pseudonym	Gender	Medical School Location	Specialty	Years in practice	Healthcare Sector	Clinical Setting
Theodosia	Female	Kumasi	Family Medicine	8	Public/Private partnership	Rural
Kofi	Male	Accra	Internal Medicine	2	Academic	Urban
Abena	Female	Tamale	Medical Officer	4	Public/Private partnership	Rural
Kwame	Male	Tamale	Medical Officer	3	Public/Private partnership	Rural
Adwoa	Female	Overseas	Family Medicine	3	Public	Urban
Osei	Male	Accra	Medical Officer	3	Public/Private partnership	Rural
Kojo	Male	Kumasi	Medical Officer	3	Public/Private partnership	Rural
Julian	Male	Accra	Internal Medicine	4	Academic	Urban
William	Male	Accra	Internal Medicine	8	Private	Urban
Emmanuel	Male	Overseas	Medical Officer	2	Academic	Urban

Gender and Years in Practice

Three women and seven men participated, with a range of clinical practice experience from two to eight years. The two family medicine physicians are both women, one with three years of experience and the other with eight years of experience. Their beliefs were in line with all other participants. The same is true for the three men, who are general internal medicine physicians. Based on this research, gender and years of experience did not appear to create differences in the beliefs of the participants when it comes to clinical knowledge translation.

Medical Education

Ghana has well-established medical schools and is therefore able to produce many of its own physicians with the same level of training as those who attend medical school overseas. Two participants attended medical school outside of Ghana, with all other participants attending three medical schools in-country: the University of Ghana (Accra), the Kwame Nkrumah University of Science and Technology (Kumasi), and the University for Development Studies (Tamale). The Kwame Nkrumah University of Science and Technology does have an Alternative Medicine program. However, none of the study participants were part of that program. Where a participant attended medical school did not seem to lead him or her to having beliefs different from others in the study group. Further, all study participants attend CPD activities every year. Five of the participants volunteered that they had attended a CPD course on hypertension within two months of being interviewed for this study.

Healthcare Sector and Clinical Setting

In addition to two teaching hospitals/medical schools, other healthcare settings represented include a public hospital, public/private partnerships, and charitable hospitals that are generally supported by religious organizations such as the Roman Catholic and Methodist churches. It should be noted that three participants who practice medicine at teaching hospitals (medical schools) represented in these data had access to and utilized electronic medical record systems, while all other participants in this research used a paper-based folder system for medical records. As Kofi stated:

We use an electronic system, so the patient's former BP can be accessed at any time that they come. It makes it easier to access instead of paper; system. It

makes it easier to access their labs, to see what they are, on and when they come in most of the time the patients we have are already on medications.

The teaching hospitals and the one public hospital had CT scanners. The public/private partnership and the charitable hospitals did not have CT scanners at the time of this study. CT scans are an important resource in the diagnosis of strokes, which are a common result of uncontrolled hypertension. In terms of staffing, all facilities had either dietitians or nutritionists on staff except for William's institution. William did report having a physical therapist on staff. Three participants worked at a facility with a designated hypertension clinic and a physical medicine and rehabilitation program. Two participants at teaching hospitals had support from a clinical pharmacologist.

All facilities utilized physician assistants. Additionally, five physicians managed a predominately urban patient population; the other five managed a predominately rural patient population. The number of physicians per clinical setting varied widely. One participant shared their hospital had nine physicians on staff including a dentist, while another participant reported being the only physician on staff. Based on the findings of this study, the sectors and setting in which the participant works had less influence on his or her beliefs regarding clinical knowledge translation compared to the culture and context of the hypertensive patient population.

Patient Population

One of the sub-questions of this research is: *How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?* The answers to this question contributed to a better understanding of factors that affect clinical knowledge translation. Of all the background factors identified in this research, patient population had the most significant influence on participant beliefs and the themes identified in this study. As stated in chapters one

and two of this research, hypertension is considered a lifestyle disease and thus is heavily influenced by culture and context. Therefore, risk factors such as alcohol consumption, smoking, diet, and exercise contribute to the development of and complications with hypertension. With regard to diet, Abena shared:

It looks like people associate like the richer you become, the more junk food you eat. People stop eating the organic foods and the healthy things and start eating the unhealthy fats and all those things, consuming alcohol, and so when people get there, when they have an increase in wealth, they rather start eating unhealthily. . . . Most people stop eating right when they have more money.

Abena mentioned alcohol consumption, as did William and Kofi. Smoking was only mentioned by Kofi and William. William noted that his patients did not smoke any more, but some of his elderly patients smoked in their youth. Kofi contributed:

I've seen a reduction. When I was growing up, I've seen a lot of smoking going around. I've seen public smoking. But again, I've seen a reduction. People are smoking less, and when they quit, they hardly smoke again. But when you go to rural areas, they smoke.

Participants described Ghanaians as having a sedentary lifestyle. This lack of exercise is a contributing factor to hypertension. Kwame explained:

People will laugh at you if you are walking to work or to the market instead of sitting in a taxi or a motorbike. They will laugh at you for using a basket and walking. They will laugh at you. But when you are riding in a taxi or a car, then people are happy about you.

Julian added:

In terms of social institutions, we don't have many of those available. For example, if you live in a community where the roads are not well done, you don't have a community space where you can walk around and then exercise to help lose weight.

All 10 participants described their hypertensive patients as predominately obese or overweight. Kwame explained:

When you are overweight or you are obese, it's a good living. It's promoted; you are being encouraged; you are being praised for being obese. And we all know obesity is one of the risk factors for hypertension. In Ghana, when you are obese, people are happy with you. When you are thin, they don't like you.

When you are slim no, but when you are obese overweight, they are happy with you. And they will be encouraging you; oh, you found a good living, a good life. So that's one aspect in which the culture of Ghana is promoting the incidence of hypertension.

All participants explained that many patients were noncompliant with treatment regimens and that there were no differences in compliance based on the education level of the patient. The socioeconomic status of the patients is a critical background factor and is discussed in more detail in the second identified theme in this chapter. Participants also reported that getting patients to commit to lifestyle modifications was very difficult.

Culture and Context

Three patient population background factors identified in these findings that had an impact on health outcomes, including hypertension, were skin bleaching, herbal medications, and relationships. One patient behavior that increases a person's risk of hypertension is skin

bleaching, as skin bleaching products contain topical steroids. The following statements illustrate the nature of the issue of skin bleaching within the context of hypertension in Ghana. Abena explained:

So with the newly diagnosed hypertensives, usually they come with very high BPs. They don't have any history of hypertension; you take the history. Maybe they have family history of hypertension. They may have the risk factors. Maybe they are obese or maybe they use topical steroids to bleach their skin. Sometimes they are also diabetics as well with hypertension. Usually when they come to the hospital with high BPs and no history of hypertension, you make the diagnosis of newly hypertensive.

Kojo added:

The patient I was talking to you about who was poorly controlled, and was later controlled, had bleached. And so she had Cushingoid features. So skin bleaching is significant here, and it's a significant cause of hypertension. Because most of them have either bleached and they use topical steroids for the bleaching.

Julian contributed:

It's an issue all over the country, and most of the time when they come in, you have to look at the skin, you have to look at the webbing between the fingers and the white spaces to see if there is any discoloration to decide if your patient needs to go off steroids to avoid an adrenal crisis. So it's an issue not only in Accra, but it's a widespread issue, especially in southern Ghana, the southern belt of Ghana.

Along with skin bleaching, the patient population throughout Ghana heavily used herbal medications. This was described by all participants as deeply rooted in the culture of Ghana and a significant issue when trying to manage not only hypertension but health in general. Adwoa stated, “They don’t seem to take hypertension so seriously. They’d rather take all the herbal medications. They’d rather not come to the hospital, say for 60% of the patients, it would be their last resource.” All agreed with Adwoa when she stated, “They don’t understand it’s a lifelong treatment. They want the quick fix....Both educated and non-educated patients alike. Most are not compliant.”

Osei shared the story of a 70-year male old patient who had been compliant on medications for 20 years. According to Osei, the patient stopped coming to the hospital for care. Osei recalled:

I found out he was just coming to check his blood pressure and then he would go back. So until after about 5 months, I saw him at the emergency with a CV [cardiovascular event]. And after talking to him, he told me that he solely came around just to check his blood pressure but not to see any doctor because somebody had introduced him to a drug which was very, very good. So he had to stop taking all his medications and then take the drugs that the person actually brought to him; unfortunately he told me that that same person was a doctor.

I don’t know which kind of doctor he was actually talking about, so I asked him to bring his medication so that I could actually see them. They were actually herbal medications. They were, you know, these supplements that actually come

up like Max ATP....So that's what he was on, so that's when I actually believe it was probably a doctor that actually give it to him because I got so mad.

Unfortunately we had to lose the patient, [who died].

All the participants mentioned the significant amount of herbal advertisements, information centers, and herbal street peddlers that promoted herbal medications. Adwoa noted that, "We always ask what are they taking before we put them on. Not only with hypertension but with most other treatments. We tell them to stop using the herbal medications and stick to ours." Abena shared:

Well, usually I have patients asking me if they can take the herbal products in conjunction with the orthodox medicine. But what I told them is I am not sure about the composition and the drug consequence of those medications and how they can interact with their BPs. And so for me, personally, I advise them that they should stop taking those herbal medications and stick to what has been tried and tested and gone through all the experiments and all the drug trials.

That's what I tell them. I am very careful, I don't encourage them to mix the herbal and the orthodox medicine. But some of them obviously will do that. Our problem here is that when they are on the herbal medications, they will stop taking the orthodox medicines.

Osei mentioned:

But aside from the education that you have given them, because we have so, like, too many radio stations and television stations that give room for anyone to educate, so they don't know whether it's education or misinformation. So they listen to them. Okay, patients know they are hypertensive, but they listen and

they say, “Okay, this is what the doctor [on the radio] has said, so the doctor has given me medications. Let me try this one as well and see if it will help.” So there are those who will combine medications or they will try to stop and take the herbal medications and see if it will work for them.

All participants highlighted that the use of herbal medications led to patients delaying medical care or defaulting on a medical treatment plan. Kofi shared, “I had a patient like that. I had a patient who went to do herbs and then came back to me with complications.” Kofi continued to say that most patients “hear advertisements about herbs that treat hypertension so by the time they come they have defaulted and gone to herbs. So by the time they come around their BP has skyrocketed and then we need to get it down.”

Additionally, marriage relationships and spiritual relationships contribute to challenges in management hypertension in Ghana. Kwame expressed that when it came to unhealthy eating, it “promotes the wife if the man will be pleased that the food has plenty of oil inside the soup is oily.” Abena noted how food was distributed within the household:

And then also when you go to large homes, even in the villages, the fathers or the heads of the houses, they are given the most meat or the richest of the food and then the kids are given the crumbs. So when it comes to eating habits of the heads of houses, they overindulge themselves. They eat a lot of large food portions.

William shared:

I recognized that during the [Christmas] break, that during festivities, patients don't come to the hospital. They prefer to stay at home with their relatives and enjoy the festivities. They don't come to the hospital until they collapse. So

during the festivities, we don't have a lot of cases of emergency. When you have an emergency case, it is really an emergency. I mean, there is almost nothing you can do about [it].

Additionally, one of the side effects of uncontrolled hypertension is erectile dysfunction. However, as William noted, due to misinformation and myths, many men believe the medications cause erectile dysfunction. Therefore, as Abena observed, "They'd rather want to have high libido than control their BP." Abena found this issue significantly impedes patient compliance. Frustrated, she stated:

And you, you tell them or you keep reiterating to them whether they know the side effects of hypertension, because it can give them strokes. It can give them sudden blindness, and they still do not care because they feel that sex is more important to them than the control of their BP.

William added:

So it is difficult to draw the line, and most of them are not on the protocol for erectile dysfunction. At the end of the day, you see that they have diabetic neuropathy or they have something else that is causing the erectile dysfunction. But they blame all of their problems on the medication. We are trying to educate them and to help them understand why they can't go without their medications.

In terms of the women, participants shared that women needed to be overweight to be considered a good wife. Julian mentioned:

Females especially, because you are seen as comfortable in marriage, you are comfortable in marriage so people don't actually work hard to lose weight. Especially when you get pregnant and have a baby. . . . So you realize that

people who are married, they tend to gain weight more than people who are single. Then also, there has been a study that shows that married women particularly have an increased risk of hypertension in our country.

Julian went on to say:

You know, in our country when you get married you tend to get extra attention from your in-laws, especially if you are pregnant. You have your in-laws coming into help you around and to make sure you get the extra bowl of fufu or, yeah, extra fish.

The findings suggest the importance of familial relationships, which included people taking time to travel to visit family members or to attend funerals. Three participants emphasized this point during interviews and its impact on trying to manage hypertension. Kwame described how often, when a patient missed medical appointments, it was because “they traveled, they went for a visit with family. So they won’t come for their appointed date that was set earlier. So most of them will default for close to one month or two months.” He went on to say that “we normally advise them that even if they are not around, they should go to a nearby hospital.”

However, as Kwame pointed out, traveling not only contributes to patients’ missed appointments, but lack of a national drug information system hindered care. He shared:

Most of them tend to buy their medicine at a nearby pharmacy shop. Most of the time, when they travel, they don’t have their previous drugs along. So what happens is the drugs will usually change. They end up changing their antihypertensive drugs because they don’t remember which drugs they use or they were on.

They don't travel with them. Based on the discretion of the pharmacy shop or the new hospital, then they will give them any drug, any antihypertension drug, for them until they come back to their original hospital, and we look in their previous folder [medical record] documentation. You see, oh no, this drug has been changed. So then the patient will tell you, "Oh, I went from Wenchi to another pharmacy shop and they gave me this drug. So that's the other challenge that we're also having here.

William shared:

People leave from home and go somewhere else. People stay with relatives. We can stay with relatives for three months and for even years, before we turn back. We have an extended family. It's been destroyed recently because things are moving more Western.

But ah, people stay with their relatives for months, for years, and it's family, it's home. So when they travel, they do not take their prescriptions along' and when they get there, there is no hospital. There is a clinic there' or since they are not feeling ill, they will not take their medications unless they turn back to their hospital. . . . And so, they come back and their BP is way up and they have begun to have organ damage, and you have to start from scratch and try to control the blood pressure and prevent the cycle from going on.

Herbal medicines were also intertwined with a third aspect of culture that influenced hypertension – spirituality. How certain aspects of spirituality are practiced in Ghana created challenges for managing hypertension. Reports vary on the percentages of people who practice

certain religions in Ghana however, in general, the prevailing faith practices were Christian, Islam, and Indigenous religions. Those who practice the indigenous religions were generally referred to as Traditionalists. Participants shared how many patients were pluralistic in their spirituality by seeking medical remedies from other faith practices that may not be the patients' primary faith. All but one participant mentioned patients attending prayer camps to be cured of hypertension. Participants shared that this created delays in care and patients developed medical complications. Kojo recognized that regardless of a patient's faith practice, be they a Christian, a Traditionalist or a Muslim; most patients exhibited the same behaviors. Kojo described:

That's the first thing. If the person is a Christian, we turn to a prayer camp. So there are actually prayer camps where people go and spend some time over there to pray. So if you come and then you have a disease there are some prayer camps where you go and spend some days over there and then pray. Those who are Traditionalist, they go and see the Fetish Priest. And all of them will attribute it to a curse, something they did wrong, and they have to go and overturn the curse and all those things. And they go through and perform certain rituals just to overturn the curse, and then follow-up is a problem; of course, compliance is a very big problem here. We have a lot of defaulters because of it.

Because the people who make the herbs are indigenous people either from the North [of Ghana] or from Benin, from Niger, they are in areas that are noted for herbal medication. We have Mallams (African Islamic wise men), so the first thing they will do is see a Mallam. So you diagnose them with hypertension, and they go to the Mallam. Some of the Mallams have an inscription they write

on a board, and then they wash it [the board] off for them to drink [the water]. So it's not just Christians or the Traditionalists who do the herbs. The Muslims also do the same.

The Muslims are also known for having the potent medications for hypertension because the Traditionalists and even the Christians will cross over and go and see a Mallam for hypertension medication or any other chronic disease. It doesn't matter, the main thing is, if you have a chronic disease, you try all other things. Some Traditionalists will try their herbs first, then go to church, then go back to the Fetish Priest, and to the Mallam also. So it's not like because I'm a Muslim I don't do this or I'm a Christian I don't do this. Maybe for some of them, but for those if you say because I am a Christian, I'm not going to see a Mallam. But then their relatives and all those will convince them that oh there is this medicine that is made by this Mallam. You just try the medicine. In fact, a relative will go to the Mallam and get the medicine if you don't want to go.

When counseling patients, Abena shared:

We try to educate the patients as much as we can, but they believe their pastors so much. And most of these pastors give them misinformation; they don't have very good formal education, and talking to them and others is even quite difficult. It's as difficult as trying to convince the patients to stick to their meds.

She went on to share:

Any time they come to the hospital, we encourage them to continue praying and in their faith, but they should also continue their medications. But,

unfortunately, sometimes their pastors tell them to stop taking their medications and just pray. So those who come with complications, after we take them from the emergency state, we stabilize them and we try to encourage them to stay with their prayers and with their faith but to also continue with their medications. And so we have a few of them that comply, but some of them still don't.

Background Factors Summary

According to the Theory of Planned Behavior (TPB), background factors influence salient beliefs including attitudes, normative beliefs, and control beliefs. Despite some differences in healthcare and clinical settings, such as access to CT scanners and various medical personnel, the most significant background factor in this study was the patient population. This included culture and context aspects of skin bleaching, patient perceptions about weight, use of herbal medications, and the patients' spirituality. The socio-economic status of the patient was also a notable background factor. Understanding how these physician participants described the cultural and contextual drivers of hypertension in Ghana contributed to a better understanding of the themes derived from the research findings.

Themes

Focusing on the central research question and subsequent questions was done in order to understand how *formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation*.

Using the TPB, I identified some of the participants' background factors that influence salient beliefs. According to TPB, these factors determine a person's intention to perform or not perform a specific behavior. Beliefs are dynamically influenced by one another and by

background factors to varying degrees and magnitudes (Ajzen, 2017). This research considered the participants’ behavioral beliefs and attitudes, normative beliefs, and perceived behavioral control. As each category of belief is dynamic, each theme may be shaped by one or more category of belief. The following diagram in Figure 4.1 summarizes the themes.

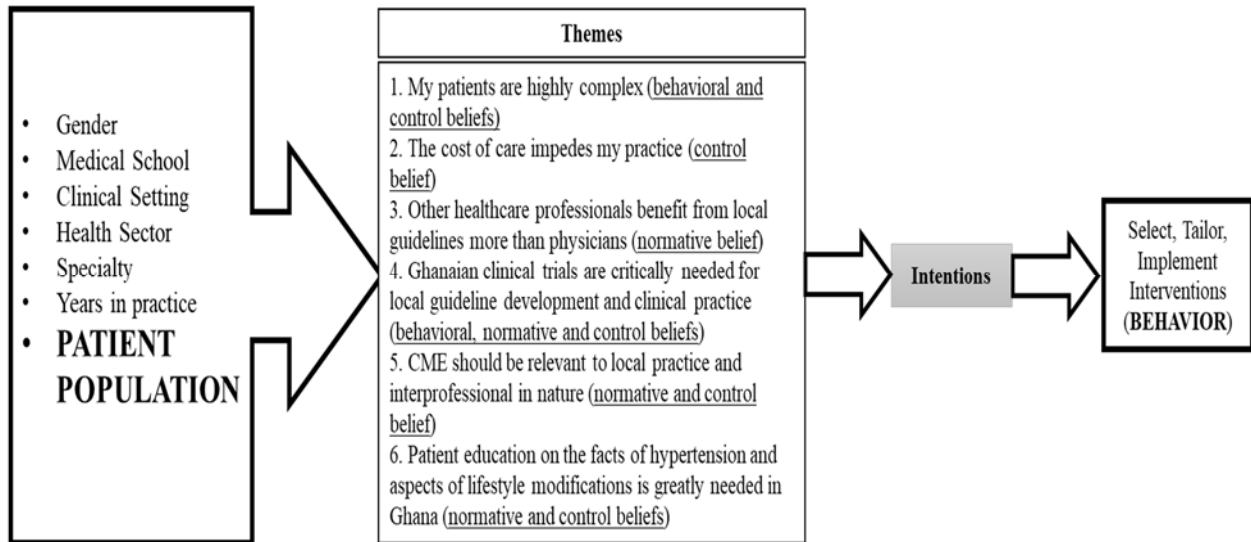


Figure 4.1. Study findings in the Theory of Planned Behavior framework.

Theme One: Beliefs about Highly Complex Patients

One theme that emerged was predominately a behavioral/attitude belief. In this study, attitudes were based on what physicians believed was beneficial or harmful to patients.

Therefore, if the physicians believed following a specific guideline was beneficial to a patient, the physicians would have a positive attitude toward that guideline which would contribute to a positive intention to use that guideline to care for the patient. Nine of ten participants believed that their patients were highly complex and difficult to manage effectively according to guidelines. These participants believed that foreign guidelines were more beneficial for translating into practice to obtain the goal of controlled hypertension in highly clinically complex patients.

However, four of ten participants believed that even though they preferred foreign guidelines that were more comprehensive, they understood that foreign guidelines were not intended for their patients. The selected excerpts describe participants' beliefs about the complex nature of their patients and the physicians' challenges finding relevant clinical information to benefit their patients.

Emmanuel began by saying, "Okay so basically the patients we have in Ghana, they don't even know they have hypertension. You try to consult on the risk factors they may have. But they don't present as textbook hypertensives." The term "textbook hypertensive" was important, as all 10 participants described their patients having complex hypertension, resistant hypertension, hypertension with complications, or co-morbid hypertension.

Emmanuel's attitude about the benefit or harm to patients of guidelines was described when he stated:

The standard treatment guidelines tell us of the ideal situations where a patient will come in maybe on two occasions with higher blood pressures than normal. But ours don't come in at that point. They come in when the complications have already ensued, maybe in having a stroke. Maybe they have chronic kidney disease. They have hypertension, so it doesn't address that part of it. Though in certain chapters, in the standard treatment guidelines, there are chapters for hypertension and chapters for other diseases that are complications of hypertension. Those chapters address those things, but as in the pages of the hypertension addressing the complications of management, it's not in there.

Theodosia shared how the absence of simple clinician-patient communication made several cases far more complex than they needed to be. She shared:

For me, I think it should be early detection of hypertension. So screening, screening, screening. Anytime you get an opportunity to get anybody in the hospital or organize health screenings, we need to make sure we get their BP. Anybody presenting with high BP, make sure they are followed up. Because there have been a few times when people were never asked to follow up, and maybe they came one time or to a health screening and their BP was high, but they were never told to be followed up. So now they come in many years later, sometimes five or six years later, and they were told that one time about their BP and now they come with pulmonary edema or something else.

Osei's attitude towards local guidelines was described as, "For guidelines, we can't do without them; even if they are old, they are helpful, but they might be detrimental in a way."

Kojo shared in what way he believed the guidelines were not applicable to his patients. He noted:

There are instances where can't I find resources anywhere, not even in the standard treatment guidelines. Certain diagnosis might not even be in the standard treatment guidelines. For instance, like you say with bleaching. If someone presents with hypertension because of that, let's say they have [cytoma] or secondary hypertension. If I remember the labs that you need to request, all those things are not even in there. The management of most of them is not in there. The treatment of most of them are not even in there. I don't know if the management of Cushing's disease [is there] and all those things.

Kofi noted that the Ghanaian guidelines:

. . . talk about lifestyle; there is a portion of the guidelines that talks about lifestyle modifications. Talks about cigarette cessation or reductions, it talks

about lowering fat intake, lowering salt intake, it talks about other things like obesity, for example. If you are obese, you have a BMI of more than 30. It talks about if you've had a family history of hypertension, it talks about stroke.

However, William believed that the guidelines would be more beneficial if they provided more detail for the non-pharmacological management of hypertension. Furthermore, all participants used foreign guidelines to inform their clinical practice. The reason why participants had more favorable attitudes towards foreign guidelines were for clinical knowledge translation was explained by Kojo, who observed:

And so usually the standard treatment guidelines are helpful for the basics, but usually there's no reason behind what's there. They don't state the reason behind what's there. They just state for hypertension, take this; first-line drug is this, second-line drug is this.

Abena agreed and sought other resources for use in clinical knowledge translation. Abena shared:

Honestly, for me, I don't remember the last time I opened the standard treatment guidelines. I usually use Medscape. Yes, because it gives me much information and gives me more options as compared to the other research that's available. So what I try to do is, I always update my knowledge through lecture videos or read anything that is interesting when I come across it.

But usually when I meet patients who are not responding to my medication, I've done everything that I can but they still seem not to be responding to the management that I have in mind, then I go back and read again to see what else

I can do, and sometimes I consult my senior colleagues to see if there is anything more to add or not. So usually I don't go to the standard treatment guidelines. I do the update, like the courses like the African Partners, the hypertension course, or if there is any other interesting thing, or any other interesting article that I come across, then I read it. Otherwise my go-to book is Medscape.

For this first theme of highly complex patients, the TPB sheds light on the general attitude or behavioral beliefs of physician participants. When considering the background factors of culture and context, delays in patients seeking care mean more complex cases of hypertension. Patients who stop taking orthodox medicines and rely on herbal medicines or prayer tend to visit a hospital or clinic as a last resort. Additionally, the lifestyle modifications called for by clinical practice guidelines are incongruent with the cultural value of Ghanaians being overweight or obese. Thus, getting a patient's BP controlled according to guidelines is further complicated. The result was highly complex patients that were not textbook hypertensives, and study participants regularly updated their knowledge to find what they believed were beneficial treatment options for their patients.

Theme Two: Beliefs about the Cost of Care

A consideration at the forefront of all 10 of the participants' minds was whether patients could financially afford care. This became critical in determining the clinical course of treatment and presented another reason why participants believed that guidelines, be they local or international, were not applicable to many of their patients with low socio-economic status. The Republic of Ghana does have the National Health Insurance Scheme (NHIS). Many of the orthodox medications prescribed by physicians were covered by the national health insurance;

however, a number were not. The country's healthcare system worked on a cash-and-carry basis, meaning patients had to pay for services out of pocket before receiving care. Furthermore, participants shared that the NHIS did not cover most of the laboratory tests, commonly referred to as investigations, outlined in the Ghanaian hypertension guidelines.

Kofi shared local guidelines were, "Okay, basically it was useful for what drugs in our setting are available to patients, for example, a patient with heart failure. You're supposed to use certain medications." Emmanuel added:

The medications in the standard treatment guidelines we use. Yes, they are in stock. But now we have the NHIS, and some of the medications are not covered by the health insurance, and then patients have to pay out of pocket.

Julian added:

I think they [the hypertension guidelines] are relevant because it's a quick way to look at medications that are available in the Ghanaian market and how you can use them. Because we find that although you have the same class of medications available, the individual types of molecules may not be the same ones that are readily available in the Ghanaian market.

William contributed:

I think that most of the time, the medications that are available on the standard treatment guidelines are those that will be on the National Health Insurance Scheme. So apart from those that are part of the National Health Insurance Scheme, we don't have other options in there. We only have four or five we don't have a lot of. So when your blood pressure is not being controlled, you increase the dosage to get to the maximum or you refer.

Osei felt that, “The last thing is, even though you want to change now, you are not going to get the drugs you need for the patients, so let’s stick to what we already have, and let’s do it like that.” Osei believed that:

Unfortunately, our health insurance system is not the best. So patients come to the hospital, you know, per the guidelines, if you see this amount of BP, you have to do this investigation, and you know that if you do that and the patient uses all their monies or if they can’t afford that, they will not come back.

Emmanuel stated:

We probably have to put them on two or three medications to control their hypertension. Because the combination drugs are expensive, we do go for the single ones, but the bill burden for them is quite a lot, so some will take it for a while and then they stop taking it. So that’s what’s been going on. Most of the indigenous people are not really well-to-do, so buying these medications every month is a bit of a challenge. If the national health insurance would stretch the coverage for some of these medications . . . So it actually boils down to if the patient can afford these medications. If not, we have to prescribe what's in stock. So that is the insurance side; from the patient’s side, it’s just about the bill burden.

Kojo described a common patient experience:

Most of the drugs that I have mentioned are covered by insurance, so it can be supplied by the hospital, but when there are shortages, the patients have to go and buy, and what I have found out is that most of them don’t go to buy. They just take the ones that are available for them. And that is the challenge. So, for

example, if I'm controlling someone's blood pressure with three medications, and then they go to the pharmacy and they can only provide one, they will write so that patients can go and buy. They will go and continue with the one medication that was supplied to them because the rest are expensive and they can't afford them.

We can write a prescription for them that is covered by insurance, and they have to go, which means you have to go to a pharmacy that accepts the insurance package, and usually those pharmacies are not close to the patients. You know, sometime they have to take most of the non-compliant ones—they don't even come to the hospital because they don't have the transportation to come to the hospital, which is closer to them than most of the pharmacies. They would have to find another mode of transportation to the pharmacy. So they don't order, they try to come another time. So they will risk another month just so they can find if the drugs are in so they can take them the next month.

Osei concurred:

But the difficulty will come in if we want to stick to the standard treatment guidelines, but we aren't getting the drugs. You know, sometimes pharmaceutical companies have to bring them, and then you want to use them, but they have run out of stock. Most patients cannot afford the medications. So you want to make sure when they come that the antihypertensives are the ones that are readily available so that you don't write a prescription for them and then they don't get it. It's just like literally they can't afford the medication. So if we

really want to stick to a guideline, we need support from maybe an agency or a pharmaceutical company that can promise us that they can have the drugs in stock at every point in time.

Kojo and William both believed that expanding the lists of drugs covered by insurance was needed. William believed that, based on guidelines, there was a need to:

. . . expand the drug lists that are available in the insurance scheme so that you can have expanding the number of options that you can choose from. Because if you do not have them, you cannot not choose, and some of the patients are on things that will not help them. But there are no options, because they cannot afford the other medications that are in the guidelines and the insurance list.

They should increase the premiums in the insurance scheme so they can expand the drug list.

Abena and Kojo believed that insurance coverage needed to go beyond drugs and cover investigations [laboratory tests] as well. The Ghanaian currency is called a cedi. At the time this research was conducted, the exchange rate with the U.S. dollar was five cedi to one dollar. As a developing country, patients struggled to pay for care. As Abena shared:

You know, when a patient comes with a stroke, usually the first thing you do is determine if the stroke is infarctive or hemorrhagic using a CT scan. But usually the patient doesn't even have the money to do the CT scan. So instead of sending the patient to do the CT scan just to find out whether the patient as a hemorrhagic or infarctive stroke, sometimes you just try to manage based on their clinical presentations and their symptoms. I think it costs 300 or 400 cedi to have a head CT scan. The 300-400 cedis could do the basic labs. The lipids,

the urea creatinine, and all those things and could also go a long way to help even in the medications that the patients will take. So depending on the affordability, how the family can afford to take care of the patients, we tailor it to them.

Kojo shared that during patient consultations he looked at:

. . . the hypertension for the previous three months to see if it is controlled or not controlled, and then I also review the labs to see whether some of the labs have been done because here, mostly labs are not run because it is the patient who pays for the labs, and most of the labs are costly.

William recollected:

I think the insurance initially used to cover a little bit more, but now not that much. I think apart from urine ARE, and BP and creatinine, you have to pay; fasting A1-C you have to pay, fasting blood sugar, you have to pay. Any other thing, CT, chest x-ray, you have to pay out of pocket. The labs are in the treatment guidelines, but they are not covered any longer.

Despite the limitations of the national health insurance scheme, Abena believed it was helping. Abena shared:

I think it's helping with the insurance. Yes, it has helped because many people come to the hospital because of the insurance. The people pay a little to top off their medications. I mean, they co-pay their medications. Sometimes they complain about it, but the attendance is still better. So those who have the insurance, they come to the hospital more, they fill their medications more.

Most of the time, if it is time to refill their medications and they have not renewed their insurance, they usually don't come.

Adwoa agreed that the insurance helped patients. Adwoa, who was in an urban setting, claimed, "Most of them come, surprisingly, because we have the health insurance here; most of them come before they get to the serious stage. But some of them come with co-morbidities. We try our best with our patients."

When it came to the Ghanaian guidelines, Kojo believed:

It is how much the government can afford to manage a patient, because they will be on health insurance. So if you want to factor in the issue of bleaching, that means the labs will increase because we will have to do labs, requests for labs to check for other factors. Our labs would increase and the medications that we use would increase.

Julian and Kojo described two situations where patients could afford care. Julian practiced medicine in an urban setting and claimed:

. . . especially in the rural setting where most people stick to the medications that are provided on the national health insurance. But where I work, sometimes you have patients that are able to buy medications from the outside market and import them into the country, so we are able to do exactly what the other guidelines do propose.

Kojo shared this experience:

I sometimes have to use four drugs. Sometimes I have to use three drugs to bring the BP down, and so this woman whose subsequent BPs were 180/71 and she had this headache, and so luckily for her, she had another insurance, a

private insurance. It was a premium insurance that she had, so she was lucky she could run all the labs on insurance, and we did all the labs and I realized that her lipid . . . she had dyslipidemia and her kidney function was mildly impaired.

In both these cases, Julian and Kojo were able to adhere to guidelines because patients could afford the care. Emmanuel shared:

Some of the things have been so rigid and not really tailored to our patients. So implementing is a bit difficult. Because they may want us to do this and that and it's not really available for us to do. So I don't think we can really use that as our guidelines for our patients. Most of the patients are either very poor or not really educated. You can't really tell them, I'm going to do this really expensive test for this so I can do this for you. I'd rather have something much more tailored to our people so we can actually benefit them more.

Osei concluded:

I think if we want to consider guidelines, we have to consider cost. Can a patient afford if we go through guidelines? If they cannot afford it, do we just manage them anyhow because they cannot afford the cost? Because cost is very, very important. For me if my patient cannot actually afford the medications, there is no need for you actually taking care of them.

Here in theme two, the cost of care, the TPB highlights the behavioral beliefs and control beliefs of physician participants. The socio-economic status of the patients is a background factor that has a clear influence on whether or not a physician believed they have the ability to manage a patient according to guidelines. The statements from participants in this theme illustrate how physicians, during the clinical knowledge translation process, weigh the benefits

and harm to a patient in terms of various courses of action. Despite a NHIS, there were still several medical out-of-pocket costs associated with hypertension. Considering that many of these patients have other co-morbidities such as diabetes, the cost of healthcare and the socio-economic status of patients were central background factors that influenced the attitudes and control beliefs of study participants.

Theme Three: Beliefs about Other Healthcare Professionals

A third theme that emerged from this research was that Ghanaian primary care physicians in this study believed the local guidelines were more useful for other healthcare professionals. Considering the TPB, this spoke to normative beliefs. When asked questions about peers and colleagues, the participants identified several reference groups. The normative clinical reference groups mentioned by participants included: physician assistants, nurses, midwives, clinical pharmacologists, physical therapists, dietitians, and nutritionists.

Theodosia believed the Ghanaian standard treatment guidelines, “. . . need to include inter-professional collaboration and communication.” Abena supported this claim, as she believed:

I see that a lot with the physician assistants. When we give antihypertensives, the patients are doing very well on it. Then when they come, they [physician assistants] withdraw one or two of the medications and the patients come back again with high BPs. I don't know the kind of education they have with that. So we should keep on educating ourselves and maybe updating the knowledge of those around us that if a patient is doing well on antihypertensives, they should continue to be on it unless they are having very unpleasant side effects from

what has been given. So the communication should flow among us prescribers so that we can make each other's work easier.

Osei also saw the benefits of the guidelines for other healthcare professionals when he shared that some physician assistants say, "I don't need a doctor telling me what to do." Osei said, "They will just stick to their old guidelines and because of how do you call it, misconceptions or miseducation, they just want to stick to the old things and they don't want to change."

Kojo shared the mentality he believed is prevalent among some clinicians when he discussed:

Most of us as clinicians assume that if the person is hypertensive, then it is okay for the patient to present with the BP that is slightly high. If the patient presents with a BP that is 150/90 or presenting at 160/90, we just assume that "Oh the person is hypertensive, so if they present at 150/90, it's okay," but when you review, you review most of the cases. Because of where I am, the patients mostly have been attended to by physician assistants, and so they assume that if a someone is hypertensive and has a BP of 160/90, it's okay because the person is hypertensive. I don't do that; I make sure that they are within control limits. I really make sure they are in strict control ranges.

William shared a reoccurring experience:

Sometimes we see some referrals who are on two calcium channel blockers, amlodipine and felodipine. And it's usually it's going to be coming from a midwife or a nurse or a physician assistant somewhere in a village somewhere trying to do what he can.

Nine of the ten participants had either dietitians or nutritionists on staff at their hospitals who counsel patients on lifestyle modifications. One participant shared that despite being at a referral center, there were only five dietitians for the entire facility. One participant expressed an interest in having the dietitians co-counsel patients together with the physicians, while another participant shared that the dietitians participated in ward rounds with the physicians and it worked out well.

An important normative reference group mentioned by nine of the ten participants was senior physician colleagues. None of the participants felt this group needed the use local guidelines. Instead, the participants saw this group as a valuable resource in the clinical knowledge translation process. These participants believed their senior physician colleagues to be a more reliable source of information for managing their patients compared to local guidelines. For example, Kofi stated, “At the hospital we have senior colleagues there, all who have a specific way of managing hypertensives, and we are taught to follow that.” Adwoa said the same. Osei provided this insight:

I use the AHA, American Heart Association. Mostly I read the articles and the European Cardiologist something something, and so basically those are the two that I use, and I think that’s what the consultants and specialists here in Ghana use. I don’t think they even follow their own standard treatment guidelines.

The findings in this study show that participants believed that healthcare providers besides physicians should receive hypertension education to improve patient outcomes. The differences in how various reference groups cared for hypertensive patients created issues in controlling blood pressure. The TPB normative beliefs in the context are also influenced by

senior colleagues. Therefore, how older physicians behave influenced how junior physicians behave.

Theme Four: Beliefs about Ghanaian Clinical Trials

Nine of the ten participants talked extensively about their belief that Ghana needed to produce its own evidence-based medicine. This theme spoke to behavioral beliefs in terms of what participants believed was beneficial for their patients and for themselves. The theme also spoke to normative beliefs about what participants believed was the socially accepted position of doctors throughout Ghana. Kojo believed, “a randomized trial in Ghana is long overdue.”

Kojo shared his perspective about local guidelines:

The issue is that the standard treatment guidelines, the guidelines that they provide, are not backed by any statistics or research, but the AHA are backed by research into African Americans, into Blacks and then into White patients. So they have extensive data that I can say okay, I can really use this because they tried this on this number of people and then it is working this way or that way. I don't need to worry.

We haven't tried it on any number of people to know that this number of people have taken this for this number of years would have this complications or would not have this complications. We don't have that. That is what is adapted from the American Heart Association because they have research and statistics on their people. Because everything in the American Heart Association guidelines is backed by research, and so I confidently can use it because I know they have combed through the data and the results are so-and-so, these are the outcomes.

But for us it [the standard treatment guidelines] is basically based on how the government can afford the drugs for individuals.

Julian shared:

Typically what we use in my setting is to try to get a lot of evidence-based reason why we manage our patients the way we do. So while we have guidelines in our country, we tend to also pay attention to what the Americans do and then what the English also do. So we started with the JNC (Joint National Committee).

Kojo also used the JNC guidelines as he stated:

When I did my clinicals, I picked up my habits from my consultant, and she was using the American Heart Association guidelines. What do you call it, the JNC, I was trained with that guideline. So I use that one because that one is more comprehensive. The treatments are more comprehensive. But we have the standard treatment guidelines that are adapted from the American Heart Associate guidelines anyway.

Theodosia is another physician who uses the JNC guidelines, and had this to add:

I think what many clinicians have a concern with is that the JNC8 [the 8th version of the JNC hypertension guidelines] is not done in Ghana, so what its saying is for African Americans, the first line are calcium channel blockers, but I think generally they tend to do well on the medications. A few with other issues, we do not start them off with calcium channel blockers. It would be difficult to pinpoint just one area. It would be nice to have our own data about which medications to use on our patients. And then also it would also be nice to

know if lifestyle, just keeping them on their old medications and introducing one lifestyle modification now; that may exercise but it would be difficult. Because the medications would be easy to do but the lifestyle modifications are not. I mean how are you going to measure whether they are really doing their exercise? You would have to get them to see if they are doing their steps or something. I don't know. But the medications would be easier. So if you have some people on a calcium channel blocker as the first-line, and you have people on ACE inhibitors as first line, then I think that would be easier than the lifestyle modifications. Like I said, if they are going to do the lifestyle modification, if you keep them on their old medications and then introduce a lifestyle modification, whether its exercise or diet, to see if we can make any headway in the management of hypertension.

Abena practiced the same way:

I usually use Medscape. Yes, because it gives me much information and gives me more options as compared to the other research that's available. I think what puts Medscape above the rest is that it is updated, constantly. Yes, so a lot of people put their research findings there. There is always new information on what to do and what not to do, unlike the standard treatment guidelines, unless they are updated again. I don't know how often they do the updates. But unless its updated you won't really find anything new, but with Medscape, they may be an update today. There may be a change. So I think with Medscape, you have the most up-to-date information as compared to the standard treatment guidelines.

Osei shared Abena's concern about keeping up to date with the most current information. When it came to the Ghanaian standard treatment guidelines, Osei believed, I think it takes too long to update. I don't know why it takes us 3 to 5 years to update our guidelines. Like in Ghana, we have the standard treatment guidelines every 3 years, but they are writing and updating BNF every 6 months or so. The question is, how many people have even seen it? And those have, how well are they using it? Not everybody uses it. So if you really want to stick to the current guidelines, for me, I think it has to be done yearly, and I feel that most people are not following the treatment guidelines because most people feel that those standard treatment guidelines are not serious themselves because they can't be sitting there and then have guidelines every 3 or 4 years.

When it came to Medscape and Abena's clinical knowledge translation process, Abena believed, "They [Medscape] may not be skewed to our environment, but you will always know the background you are going to tailor it to your patients." She goes on to share that, "with Medscape, at least you know the background. You know the theory behind it. You individualize the patient and then treat them accordingly."

Kwame contributed:

We are using the internet or go to Medscape also the Handbook of Clinical Medicine. Yes, but they are actually not good enough; we need to refer to our own, we need our own homegrown material. We're not the other world, they are not for our practice.

Indeed, Kwame was not alone in this belief. The following excerpts participants' views on how Ghana's culture and context needed to be included in guideline development.

Kojo shared:

And so the data on bleaching because it is not common in America and in Europe, research then is not common in America and Europe, and since we are adapting their data, there is no way we can factor that into our standard treatment guidelines, and that is the issue.

Abena's concern with skin bleaching had motivated this participant to want to conduct a study on the subject. Kojo stated, "So it's a problem here even though there is no data to back it, but it's an issue here." In addition to skin bleaching, other participants described other large studies related to the culture and context of Ghana that they believed were needed. Julian believed food studies were needed. Julian shared:

And so there are things that can be done a good dietary regimen like maybe adopting a DASH diet in this setting. But being able to adopt that diet to what we have on a typical Ghanaian meal is important. Because there is a lot of research out there that have very good results that can be adopted to our setting for the patients benefit. I think I've read of a couple of individual research, mostly dissertations by masters and PhD students, essentially those who are in nutrition. But have not come across any extensive study, randomized, and controlled study that has generated any major data probably published in a peer-reviewed journal yet. They haven't reached long enough or probably wide enough, so we have small cases that have been written.

William and Julian believed that more extensive research into herbal remedies was long overdue. Julian believed:

If there was any clear statement or any guidelines on which ones you can take, which side effects you should expect, what kind of interactions you can expect with them. Those would give a bit more confidence to help practitioners to in the Ghanaian setting to see how best we can adapt their treatment to what the patients may be on or probably you can also recommend what they can take.

William shared what he believed about a study on herb-drug interactions:

Would be a very, it would be a very laudable clinical trial to do because right now, we have to two sides pulling. We don't know what is in the herbs. They [herbalists] don't know either. And all we can see is the end results of what the patients have taken, and if we can really prove that the neurotoxins in this particular herbs, this particular concoctions in the drug stores, because some of them are being sold over the counter. Every day is proving that the herbs are giving us a lot of problems, but right now, we have the facilities to do the studies and to isolate the chemicals that we're really struggling with.

For Kojo, it was a matter of trust. He described this behavioral belief:

We are hoping that maybe in the near future our standard treatment guidelines will be based on research done here in Ghana so that we can trust it. Research that you can trust. That's the main issue, because, honestly, I'd rather trust the JNC guidelines because every, every, every statement in that JNC is backed by research and statistics, and they lay it down for you to know like they present the research, and then they give you the information, so all the research and they do so for Blacks and for Whites and for patients. So you have some data that you can trust.

Three participants shared their thoughts on particular clinical trials for which, they believed, the resulting evidence would be beneficial to patients and thus facilitate clinical knowledge translation. Julian shared:

I think I and my colleagues are particularly interested in risk factors and then screening, and the parameter that we should look at to decide how often to screen a person and at what point should we be concerned with a patient developing hypertension. If research could define those parameters for us, that would be great. I know that in the Western world, a lot of this has gone on, and they can tell you that if you are 35 years and above or 40 years and above you need to at least have your blood pressures checked so many times a year. So if those studies could help us determine the specific risk groups or which of you would be at risk or your specific waist size that will also increase your risk, then that's a good way to start.

Then also study the drugs. I know that some have African Americans involved in some of those randomized control trials, but for our area, the genetics may be a little different because most people of African American descent have some genes that come from a longer line that could be a little different. So we would like to have some drugs, those drugs that we commonly use being randomized and then see if they are effective at reducing major cardiovascular outcomes.

Emmanuel believed a clinical study focused on patient perceptions is needed:

So that would be the sample group, the lower class, the middle class, and the high-class group of the population. And we would give a stipulated same amount

of information to the whole sample group. And for I'd say for about a week or two for a particular amount of time, and then after the set amount of time, we see how they assimilate and understand the concepts and the information that was given to them. And maybe have a questionnaire or evaluate what they've learned to see if they really understand what we are pushing to them to understand about hypertension. Then we could take the results from them so we understand; because it's a randomized trial, we would actually be able to know if the knowledge being given they will be able to assimilate or whether because of their social standing they do not understand the hypertension concept itself. So we can actually get an idea if it's because of social status or is it just disbelief in the whole thing altogether.

Emmanuel added:

It can tell you about their cultural view as well, and we can get a better idea of what people really, really understand about it and how well they will they go to amend or even try to accept what we have given them. It would be an eye opener, and we would give much more information in that format. After that is done, we could go make it a much smaller group, more concise, because we have an abundance of socially economic groups. Lower class, middle class, and high class. This time it would be much smaller by region. Maybe this region and that region and then go national. That way we could capture more people and get their understanding of the disease process itself and what they actually think this is. We can be informed and can actually work to turn around their disbeliefs and address the misconceptions about the disease process.

Abena believed in the need for the same study as Emmanuel. In addition, William shared:

I'd like the study to focus on the factors that lead to non-compliance. And for hypertension control. If we can find out the factors—we have a lot observation—but if we can prove it in terms of a large clinical trial, maybe it's going to ring a bell with policymakers and other healthcare professionals in the education of our patients and the design of our packages to prevent the organ damage that we see so frequently.

For clinical knowledge translation to be effective, Emmanuel believed:

We should also have maybe more trials in the country for our race, because our race is known that different climatic conditions, different lifestyles, all contribute to these conditions [clarify]. Because right now, we depend on the Western world for their clinical trials, which may not be ideal for our patients.

However, Emmanuel and Julian described an obstacle to the development of these studies. Emmanuel believed:

The problem isn't that we are not knowledgeable. We have very knowledgeable people. But in truth, the resources, not the human resources but the financial resources, that is a problem. Because people here are very knowledgeable. There are actually very good clinical pharmacologists, there are very good scientists who actually have the technical know-how. But the funding is too expensive, so people aren't actually doing research, so they'd rather wait for a trial somewhere and make conclusions to guide individual care.

Julian added:

The challenge we have here in doing research has a lot to do with funding because funding is not readily available, you'll find small pockets of studies being done, but we need large studies that will have an impact on guidelines.

First, with regards to evidence-based medicine, these 10 Western trained physicians who participated in this study wanted to see the evidence behind the recommendations made in local guidelines and not just the recommendations alone. This lack of evidence description may be a contributing factor to theme three, as to why study participants believed the local guidelines to be more beneficial for other healthcare providers and not doctors. Second, to facilitate clinical knowledge translation, studies, including those described in chapter two of this research, affirmed the need to incorporate culture and context into clinical practice guidelines. As Kojo concluded, "That is the main issue we have with the standard treatment guidelines, because it is not backed by research done here."

Theme Five: Beliefs about Supplemented by Continuing Professional Development

Nine of the ten participants shared how they used theme five, continuing professional development (CPD), to support their clinical knowledge translation process. In terms of the TPB, using CPD, often referred to as CME, in this manner is a control belief, because CPD should increase a physician's ability to adhere to guidelines or improve patient care. One of the sub-questions of this research was: *how do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?* Six participants provided detailed descriptions of CPD experiences.

Osei proclaimed, "If we want to have our treatment guidelines very strong here, then you have to develop a workshop, probably for the hospital first and then for the whole district,

because this is the referral center for the whole district.” Theodosia mentioned the importance of CPD to provide consistency in care. She stated:

We want to make sure we are taking everybody’s pressure accurately when they come to the hospital. . . . Like if we could have the new guidelines from the JNC8. That’s the guidelines that Ghana uses now. So it is uniform from hospital to hospital, so we are basically doing the same thing. But what are the new advances, the new technologies in the management of hypertension.

Kwame attended a CPD on hypertension shortly before being interviewed. Kwame claimed he incorporated the following knowledge into his clinical practice:

The cautious use of the antihypertensives. For example, you don’t need to go with a really high dosage. We can go with a lower dosage and titrate it. What folks do in Ghana, or in most of the settings where I have been here, we go to the maximum dosage right away, but what I learned from the lecture is that we should start from the minimum dosage, then we titrate upward until we get the normal blood pressure for that patient, and then that’s enough.

We also need to be looking for the secondary causes of hypertension, especially in the young kids and the infants. Not all the blood pressure may be hypertension—some may have an underlying cause which we have to look out for. So when we look for the underlying cause you don’t just look at blood pressure to control it. Once you find that underlying cause, you bring it out and you start treating it; that was a very good highlight of the lecture we learned from [the CPD].

Julian attended a CPD on hypertension less than a month before being interviewed for this study. A key takeaway for Julian that he would like to incorporate into practice was:

. . . that our patients should be empowered more for their own health and monitor their own blood pressure. We always have to discuss with them being able to get their own blood pressure kit at home to management. And then also being a bit more inquisitive to try to understand why a patient might be presenting with high blood pressure. Most often you assume that because a patient is over 40 years old or they have a family history of hypertension. Most often the doctor or healthcare provider is going to assume it's hypertension. And start managing you on medications. And probably not do an extensive study.

The CPD stimulates you to look deeper and that you are to increase your degree of suspicion so that you are be able to actually solve the problem for the patient.

Kojo shared the benefits of interprofessional continuing education when he stated:

I was glad that most of the physician assistants were there. And the nurses also were there too, to listen. The issue of counseling was hammered, and I think it was good that they really hammered on counseling the patients.

Relative to theme one, all 10 participants expressed that many of their patients were sicker than what is discussed in the local hypertension guidelines. Therefore, the following CPD content was described by study participants in terms of what they believed they needed to know (control belief) in order to better care for patients. Julian described content of interest that included:

I may be interested in knowing more about how to manage patients with resistant hypertension, especially a patient who is already on four medications

including a diuretic and a calcium channel blocker and to find out what we can actually do to help them, because I have had a few difficult patients.

Kofi shared he would like developers of hypertension CPD to cover:

I would want them to cover the most effective class of drug for hypertensive patients without any complications and with complications. Okay, so some of the things I would like the CPD courses to cover include hypertensive people who have other complications, like renal complications, and the lifestyle they would need in combination with the drug management, and then people with an issue of heart disease.

Osei stated how CPD should cover management of hypertension:

My primary concern has been management of hypertension in patients with end stage renal disease. And then the choice of drugs to use for patients who are diabetics and who are also have been maybe a cardiac condition, like with the patient who had an MI, which choices of drugs should we use. Also patients who have hypertension urgencies.

William shared his interest in CPD addressing a complication of hypertension:

If I'm to go, personally, it would be for stroke management. We know what to do, but we don't have the facilities. If we do a CT scan, the patient has to travel at least two hours in an ambulance to get a CT scan done. By that time, if you have an infarct, your time to do thrombolysis is gone. Honestly, I haven't seen anyone do a thrombolysis since I've been practicing. Not since actually I was a medical student.

So I think, stroke management is one of the areas management of myocardial infarction in which we know how to do conservative management, how to use the platelets and morphine, and we know antihypertensive therapy. We can't always do an ECG immediately, as we don't have cardiac enzymes available. We don't have a cath lab. The cath labs are all in Accra, and you have to pay before you enter the place. So stroke and myocardial infarction in hypertensives, those are the main things. We know what to do, we know what the book says, but we don't have the facilities.

Kojo shared a different perspective on what content he believed needed to be covered in the CPD course in order to improve patient care. Kojo contributed:

The concentration of managing a community. We are serving a community, and if the people in the community do not understand what is wrong with them or they don't agree with you and then you impose medications on them and tell them they have chronic conditions and have to be managed for a long time, it is a challenge. And so we should consider the community that we live in. I know CPD is organized in various communities, but for where we are, the CPD should consider our cultural challenges. So patient education should really be hammered, because we will come and we will have the knowledge of everything, but if we are to implement, we are implementing it in a community, and if the community doesn't understand what you are doing, I don't think it will go anywhere.

Abena agreed, stating:

I think the regular CPD—the knowledge, people getting to know about the treatment and the management—is fine. What we currently do is fine. But then what we need to do besides sitting in the classroom being updated on the knowledge of hypertension, we should also move and then educate the people more—through their pastors, through the churches, through whatever so that they will know to stick to what we want to give to them.

The background factors of years of clinical experience and where a participant attended medical school had less influence on clinical knowledge translation compared to the patient population. However, CPD becomes a critical continuation of medical education past medical school and supports physicians throughout their careers. These findings illustrate the potential for CPD to normalize the clinical management of hypertension across Ghana, address clinical issues not detailed in guidelines, and support all healthcare providers.

Theme Six: Beliefs about Patient Education

Community was key, which was why the last theme identified in this research—and perhaps considered the most important theme by participants—was the need for patient education. Ten of ten participants shared how they try to educate patients, the patients' families, or the communities they serve. This theme, within the TPB, is a normative belief, as all 10 participants used the term “we” when describing efforts to improve health outcomes with patient education. Participants such as Theodosia, Abena, Kwame, Osei, Kojo, Kofi, and William described the reference groups, such as pastors, fetish priests, assemblymen, and chiefs and how each played a role in hypertension management. Participants also shared how educating these groups was as important as educating the patients. Patient education was also a control belief,

because what the patients believed to be true about hypertension was a factor that either facilitates or hinders a physician's ability to manage the patient's hypertension.

Abena shared her community-minded thinking:

It is time to move into the community. After educating the health professionals on the things that are actually affecting communities, we should be charged to go to the churches, to the communities to also explain to the grass roots what we really want them to do. Because you can have all the knowledge as a healthcare professional, but if your patient does not want to listen to you, they will not listen to you. But there have been a few times that some of us have been able to give talks at the churches, which encourages patients to come back to the hospital and continue their medications.

William expressed:

I think the first thing is education. The clients think that if you have diabetes or hypertension, then it is a fearful sickness. And the myth around is that if you take the medication for some time, you will lose your manhood, you will develop erectile dysfunction or other complications. I basically take time to explain to them that diabetes and hypertension are a risk factor, and that if you manage them, the complications are not going to come. And you tell them in that way I think they are a bit more receptive and they will not stop the medications. But if you don't, most of the patients don't even know they have hypertension. They just know that every month I come to take my medication. What they are taking it for is not known. So education is number one.

Abena shared her frustration:

A few patients that have had hypertension don't take it seriously, just like the education that is given them. It amazes me that after all the education, and the person being made aware of the side effects of uncontrolled hypertension, the person will still not take their medication or will still not take their diet seriously. Some of them are just so stubborn. I think because you can spend time and again go through the pain of educating them and when you educate them, you give them the medications and schedule them to come for review and they will not come or they will come back six months later with a severe headache.

Kojo believed counseling was important as he explained:

I think basically our counseling and information, like public health information, should be intensified; our counseling should be intensified. We should have a separate clinic for diabetes and hypertension. Because during clinic days, we give education on hypertension and diabetes.... Then our information centers can at least hear it. Because our information centers only market herbal medications, because the consultants are herbalists, and they do whatever they can to make sure that like they tell the patient that, "Hey, if you go to the hospital, they will tell you that your sickness cannot be cured, but it's a lie. Your sickness can be cured." It's everywhere. So if our information centers can stop misinforming people and stop advertising herbal medications and really, especially the misinformation. If we can stop them from misinforming the patients in our community, then that's why we need our hypertension clinic running.

William believed the additional time spent counseling patients resulted in better outcomes:

If they understand their condition, I think compliance improves. So those are the only things that I would like to add and tell my colleagues. To educate the patients well, eliminate all the myths about the alternative medicine and the public information centers; I think patients can do better. Because we should spend more time before clinic educating the patients or as the patients come in. They should spend time educating them, and that would go a long way to help in the management.

Emmanuel agreed with William and stated:

I think what I would say to my colleagues is that they just take that extra time, even though it's a bit hectic, and thoroughly explain to patients so that they do understand the importance of being on antihypertensives and being compliant and because some clients mix medications and they'll be taking orthodox medications and they'll be taking traditional medications as well.

For the physician assistant, they also need time to properly explain to the patient the side effects of this and that so that the patients don't say, "Okay, I took orthodox medicine and this happened, so I won't take it again." I do tell the patient, "Okay, if you take this medication, there is a likelihood that maybe having a cough,' so that when those things come, the patient is aware and they say, "I took the medication and the doctor said this would happen. I could switch to other medications to help." But when they take and don't know the side effects, they try orthodox medicine and it's not working, so they try the alternatives.

Kwame shared:

Yes, for me, I tell them to stop taking the herbs. I explain to them about the dangers of some of the herbs that they are taking, and I usually inform them, and it's really hard for them, so I usually counsel them in a nice way. I tell them in a nice way that they should avoid the herbs because it doesn't help them and to only concentrate only on the drugs provided from the hospital.

Eight of the ten participants shared how conducting patient education was a challenge.

This included Emmanuel, sharing that the doctor-to-patient ratio made patient education difficult. William stated that with so many patients, the clinics got overwhelmed. William believed a challenge was:

Our problem over here is what we call the public information centers, where we have elders and other alternative medicine people go and pay for their advertisements, and they go and claim a cure for hypertension and diabetes. A lot of our patients who come to the hospital are either on the herbs with the orthodox medication or they have stopped the orthodox medication altogether. So we are having a lot of complications: chronic kidney disease, strokes, and heart failure. Since I've come, we've been doing education in the professional clinic, the diabetes and hypertension clinic. So we are having some results, but it is difficult to detach the views of cure from our patients, especially the elderly ones, who are used to herbal medications.

Abena shared her facilities attempts at patient education:

In our hospital, we have a hypertension clinic. It is supposed to be a hypertensive clinic in the morning before consultation is given. People ask

questions about their conditions and all those things. But because of the numbers, there are lots of people who come to the hypertension clinic. And the clinicians aren't many, so you don't really get a lot of contact time with them. The hospital also has slots on the radio where we are supposed to be educating the people through radio, but it's not that effective. So I think those structures are already there, but the staff strength and the numbers to do it is overwhelming.

One experience four participants shared that they felt was effective patient education was providing community talks. Kojo believed:

I think there should be more talks like that. Because you meet them at their level, you meet them at their faith. Like if a pastor has invited me to come and give a talk and the pastor is supporting it, the patients will follow him and then there is no stigma. No one will question their faith because they are taking hypertension medication because the pastor has invited someone to come to talk. So that one is very helpful.

William thoughtfully explained:

If you do education and you explain to them that it is something that the problem is not going to go away and the medication is not something that will make you less of a human being. You are just going to be taking medication to make sure your blood pressure is like somebody who doesn't have hypertension, then they are more likely to comply. But I think education is number one.

Emmanuel aptly concluded:

The problem here is that it is rooted in belief. So the more they share, the more they hear, the more they understand, the more they can also inform other people, so in the long run, the younger generation will be filled with the information we are giving them. It's much more efficacious than just doing the randomized trial to see what drugs work. That could also be done, but the problem is information.

This finding demonstrates the primary care physicians' commitment to the communities they serve. Several background factors influenced this theme such as the spiritual beliefs of the patients and the education level of the patients. The need for patient education addressed a normative belief as participants see themselves as part of the community. This theme also spoke to control beliefs as participants have the ability to directly educate patients and communities themselves. The study participants saw patient education not solely the responsibility of nurses or community health workers, but a personal responsibility as well.

Summary

This chapter delineated six themes generated from one-on-one interviews with 10 Ghanaian primary care physicians who lived and practiced medicine in the Republic of Ghana. The qualitative study used the theoretical framework of the Theory of Planned Behavior and enabled me to delve into the cultural and contextual issues perceived by study participants as key influencers on their beliefs and how those beliefs influenced clinical knowledge translation. Background factors, behavioral beliefs, normative beliefs, and control beliefs each contributed to varying degrees in this study. Chapter five provides a summary of the findings, implications for future research, and a conclusion.

Chapter Five: Conclusion

This chapter provides an analysis of the findings presented in Chapter Four. I present in this chapter (a) a discussion of the problem and findings relative to theoretical framework; (b) a presentation of a graphic depiction of the theory of planned behavior (TPB) and clinical knowledge translation (CKT); (c) implications for policy, education, and future research; (d) limitations of the study; and (e) conclusion. At the time of this study, there was no known published research in the CME literature investigating the influence of physicians' beliefs about clinical knowledge translation in Sub-Saharan Africa. Olson (2016) observed that CME research must move beyond whether CME works, and developers and evaluators need to pay far more attention to the context in which it works.

The context of CME in Sub-Saharan Africa, including the Republic of Ghana, had not been studied as in depth as North America and Europe. There were few published studies or reports as to the clinical knowledge translation process and whether physicians implemented what they learned within their clinical work. In short, in Sub-Saharan Africa, knowing how clinical knowledge was translated into practice via CME remained unknown.

This study contributes to the CME literature by taking a qualitative, theory-based approach to the development, execution, and clinical knowledge translation of accredited CME within the culture and context of the Republic of Ghana's health care environment. This research went beyond the traditional research of CME effectiveness by providing an enriched understanding how formal knowledge and informal knowledge of physicians influence clinical knowledge translation. Investigating the influences of salient beliefs grounded in culture and context on physician behavior may call for a reconsideration of how hypertension content in accredited CME is developed in Ghana.

The purpose of this qualitative study was to identify themes regarding Ghanaian primary care physicians' (PCPs) beliefs and whether such beliefs influence clinical knowledge translation of Ghana's hypertension clinical practice guidelines for the care of adult patients. The overarching themes identified include the following. Primary care physicians managing hypertensive patients in Ghana, stated the following beliefs:

1. My patients are highly complex (behavioral and control beliefs),
2. The cost of care impedes my practice (control belief),
3. Other healthcare professionals benefit from local guidelines more than physicians (normative belief),
4. Ghanaian clinical trials are critically needed for local guideline development and clinical practice (behavioral, normative, and control beliefs),
5. CME should be relevant to local practice and interprofessional in nature (normative and control belief), and
6. Patient education about the facts of hypertension and aspects of lifestyle modifications is greatly needed in Ghana (normative and control beliefs).

Discussion

The findings of this study provided answers to the following research question: *How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?* Formal medical education of eight of the 10 participants was provided in Ghana. The sample of participants in this study did not show any differences in beliefs between those who obtained formal medical education outside of Ghana compared to those who obtained formal medical education in Ghana. Additionally, all participants attended CME courses as required by the Ghana Medical and Dental Council to maintain a license to practice medicine.

However, formal learning, such as in medical school, residency programs, and CME programs was one of the few sources of medical knowledge. Chunharas (2006) outlines four dimensions of clinical knowledge translation. The first dimension discussed the diversity of knowledge resources and encourages researchers to be cognizant of available knowledge sources and the preferences of those knowledge sources. The informal belief systems of participants were consistent in terms of seeking knowledge from diverse resources including: clinical consultations from senior colleagues, utilization of Medscape®, foreign clinical practice guidelines, and other reference materials. There was some variation as to the go-to reference materials or preferred guidelines, with some using Medscape® first and others using the Joint National Committee, the American Heart Association, the American College of Cardiology, European guidelines, or a combination thereof.

The second dimension for clinical knowledge translation Chunharas (2006) outlined was the context in which clinical decisions are made. Chunharas purported that understanding the context contributes to understanding how the knowledge translation process should occur within that context. The informal beliefs of participants help shed light on the context. All participants believed that their hypertension patients sought care from traditional medicine practitioners before coming to hospitals or clinics. They all believed that most of their hypertension patients took herbal remedies along with prescribed medications and that the cost of medical care comprised a physician's ability to adhere to guidelines. Further, all participants believed that the prevalent lifestyle in Ghana, including a high carbohydrate diet and sedentary lifestyle, contributed to the high rates of hypertension in the country.

Additionally, the clinical context of the participants varied widely, as some physicians practice in rural, urban, private, public, or academic settings. Some clinical contexts had

electronic medical records, others had designated hypertension clinics, while others had dietitians or nutritionists, where other clinics did not. Some clinical facilities were regional referral centers and thus had access to medical equipment and personnel, whereas other facilities did not have this access. One of the clinical facilities in this study had nine physicians on staff, including a dentist, whereas another clinical facility in this study only had one physician.

The third dimension in knowledge translation is the nature of the knowledge itself. The knowledge should be evidence-based, explicit, and as scientifically sound as possible. Consistently across all participants, the physicians believed in the importance of evidence-based medicine and the value of clinical practice guideline adherence in Ghana to optimize patient care and improve clinical outcomes. The last of the four dimensions for knowledge translation, according to Chunharas (2006), was the process of knowledge translation; he claimed knowledge can be translated in a variety of ways for clinical decision-making. Based on this study, the diversity of knowledge sources, the notable variation in the clinical context, the importance placed by these physicians on evidence-based medicine, and how each physician translated knowledge into practice was highly dependent on the second dimension, the context.

According to the Landry et al. (2006) clinical knowledge translation process, knowledge is created by looking at the context of medicine and then deriving data from it. Study participants discussed this aspect of knowledge generation using informal processes. Only two healthcare facilities in the study had electronic medical records, which enabled those practitioners to derive data in a more effective manner than other healthcare facilities in this study. Landry et al. (2006) claim that knowledge transformation is the process of developing tools and processes to collect and manage healthcare data.

It should be noted that there have been a few epidemiologic studies of hypertension in Ghana, and at least six study participants shared they were aware of these studies, as the studies were included in the various CME activities. However, at the time of this study, Ghana did not have a national registry for monitoring hypertension. Therefore, the knowledge transformation process was physician specific and based on the individual physician's interest in collecting and managing data. In this study, one participant stated that he personally reviewed the charts of 100 hypertension patients to look for trends.

Next, Landry et al. (2006) reported that translational research transforms the healthcare data into information that allows healthcare providers to interpret their own information in their own way to derive actions pertinent to their needs. It should be emphasized that each step of the knowledge-creation process is context specific. Without locally derived data to serve as a basis for the clinical knowledge translation process, Ghanaian physicians in this study had to rely on knowledge derived from other places that were not always contextually congruent with Ghana.

Another factor that Landry et al. (2006) raised manifested itself in the findings of this study. Landry et al. (2006) describe knowledge incompatibility as the phenomenon of attempting to implement knowledge that is not compatible with the healthcare context for which the knowledge is to be implemented. Findings show that physicians believed that practice guidelines, be they local or foreign, were incompatible with the culture and context of Ghana, making it a challenge to adapt guidelines into practice.

The first sub-question of this research answered by these findings is: *How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to the cultural and contextual beliefs systems that they hold?* It should be noted that while this research used the Ghanaian standard treatment guidelines as the clinical practice guidelines of reference,

the participants discussed a variety of clinical practice guidelines from Europe, North America, and Ghana. The findings from this study provide a two-fold answer to this research question. First, most participants were able to describe a few compliant patients with non-complex hypertension who had no co-morbidities where adherence to clinical practice guidelines proved beneficial to patient outcomes.

Second, while all participants believed in the validity of the evidence-based medicine behind various guidelines, the findings of this study identify the need for local, multi-center clinical trials and studies that generate evidence-based medicine germane to the culture and context of Ghana upon which hypertension clinical practice guidelines should be based.

The second sub-question of this research addressed by these findings is: *How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?* The participants in this study believed that the culture and context of Ghana fostered an increase in occurrence of hypertension and made clinical knowledge translation difficult. The Theory of Planned Behavior background factors were also risk factors for hypertension; they included diet, exercise, spiritual practices, socio-economic status, and perceptions of wealth and beauty. These factors contributed to lifestyle behaviors that lead not only to the increase in the diagnosis of hypertension but to difficulty in managing hypertension according to various guidelines.

One cultural issue of note is skin bleaching. According to study participants, some people in Ghana believed that lighter complexions are more attractive. This belief leads to the behavior of skin bleaching. The practice of skin bleaching includes long-term use of topical steroids, which is a risk factor for hypertension. All but one participant believed skin bleaching was a major cultural issue in Ghana. Another cultural issue contributing to hypertension is weight. All participants found being overweight or obese a cultural stumbling block, as the perception in

Ghana is the larger a person is, the more prosperous he or she must be. Obesity is a risk factor for hypertension as is a high-fat, high-carbohydrate diet and sedentary lifestyle, which were all believed by study participants to be prevalent in Ghana.

The findings of this study point to the hypertension health outcomes of medically pluralistic communities. All physician participants believed that their patients sought care from traditional medicine practitioners or spiritual leaders first and that many patients only sought care from orthodox medical professionals as a last resort. Study participants believed many of their patients continued to seek care from traditional medicine practitioners while being managed by orthodox medical professionals. Many patients delayed care from an orthodox medical professional by using herbal remedies, attending prayer camps, or engaging in activities designed to remove hexes/curses they believed caused the hypertension. Findings suggest that physicians believed patients pursue remedies that were marketed as and believed by patients to be cures for hypertension. Currently there is no known cure for hypertension; therefore, patients may have believed they no longer had hypertension when they in fact did. This in turn increased the rate of stroke and even death.

These cultural and contextual perceptions led many study participants to believe there was a need to increase patient education. The goals of patient education as described by participants included dispelling myths associated with hypertension, explaining the side effects of medications so patients know what to expect, and lifestyle modifications.

The third and final sub-question answered by these findings is: *How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?* CME courses create interprofessional communities of learning where best evidence can be translated into the context of the learners' practice

environment. The findings of this study highlight the importance of addressing culture and context as well as directly addressing physician beliefs. According to the Theory of Planned Behavior, the background factors (culture and context) influence beliefs, which in turn influence a person's intention to perform or not perform certain behaviors.

The type of CME believed to be most effective, as described by study participants, was interprofessional in nature and provided team learning that included physician assistants, nurses, physicians, and other healthcare professionals. Content that described the latest medical advancements in hypertension were found to be interesting by study participants. However, content that addressed patient interactions, such as taking more detailed patient histories and more time counseling patients, was believed to be more relevant to patient care. CME on patient histories and counseling were associated with the identified theme of patient education.

The Ghanaian radio stations and local information centers were active promoters of medical cures and convinced a largely under-educated population of the medical benefits of various herbal remedies. Thus, participants wanted to learn more strategies for meaningful patient engagement that would allow physicians to detect hypertension earlier and identify possible co-morbidities or secondary hypertension as well as counteract the rampant miseducation/misinformation about hypertension.

Findings also point to CME in Ghana as a function within clinical knowledge transfer, meaning participants believed it was important to share what they learn in CME activities with not only other healthcare colleagues, but some study participants believed learning should be shared with patients. Some participants shared the need for an intentional link between CME and patient education. This knowledge sharing behavior seemed to be part of the healthcare culture within Ghana.

Integrated TPB and CKT graphic

The answers to the research questions supported by the study's theoretical framework of the Theory of Planned Behavior (TPB) provide insight into how the TPB interacts with the clinical knowledge translation (CKT) process for primary care physicians who manage hypertension in Ghana. Figure 5.1 is my graphic depiction of planned behavior in clinical knowledge translation. Conceptually, this graphic illustrates the intersections of beliefs with various components of clinical knowledge translation.

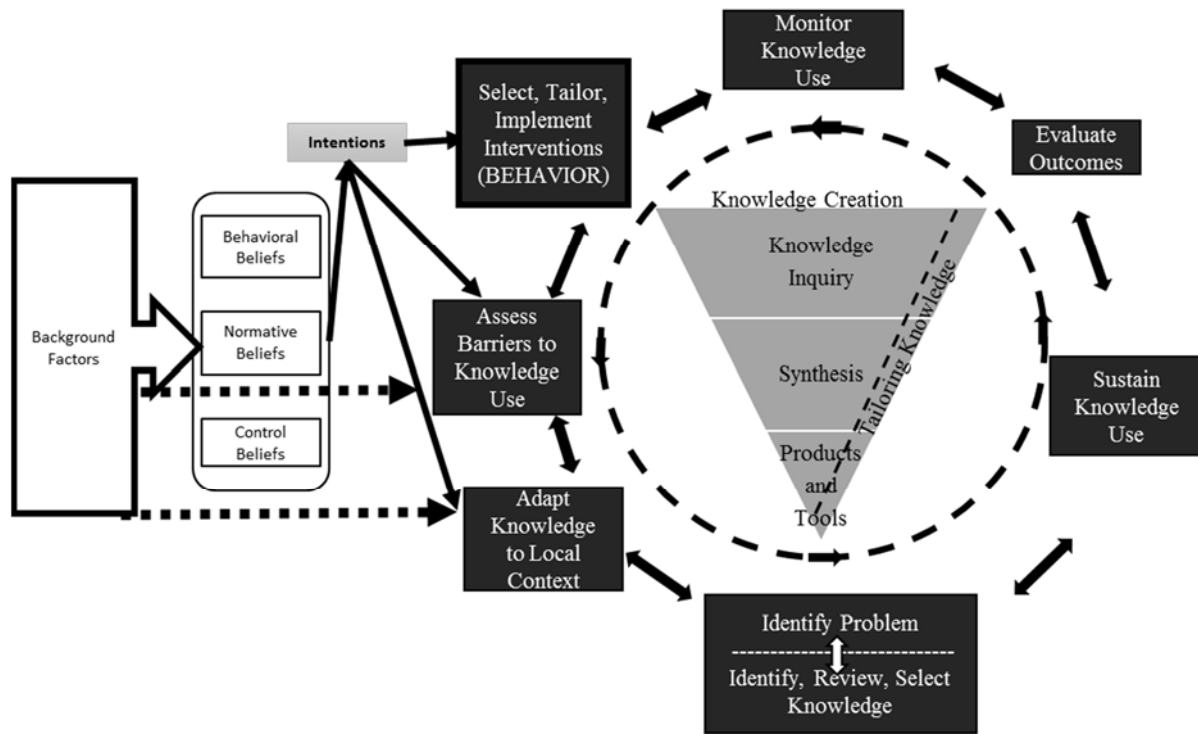


Figure 5.1. Integrated graphic description of planned behavior in CKT.

Background factors such as where a physician's healthcare sector and clinical setting can influence how knowledge is adapted into a local context. Background factors such as where a physician attended medical school and completed residency can influence how they perceive barriers to the clinical knowledge they acquired during medical training and medical practice.

Further, behavioral, normative and control beliefs influence not only behavior, but how clinical knowledge is viewed by the physicians and where or not it is use.

When presented with a newly diagnosed hypertensive patient or a patient being managed for hypertension, all participants sought to identify the problem using patient histories and measuring blood pressure (BP). The background factor of medical education has trained all participants in this practice. Background factors, which included the patient population, have an impact on whether or how physician knowledge is adapted to the local clinical context as well as how physicians assess barriers to knowledge use. Often the barriers were comprised of background factors. In fact, findings from this study suggest that the background factors can impede or facilitate the CKT process as much as if not more than behavioral, normative, or control beliefs.

For example, a component of the CKT process is monitoring knowledge use. This is often done using the process of a chart review or reports from an electronic medical record system. This allows healthcare professionals to look across a range of patients to identify trends. The background factor in this research of the healthcare sector included private/public partnerships, academic medical centers, public hospitals, and private hospitals. At the time of this study, only the academic medical centers had electronic medical records that allowed physicians in those settings to more effectively monitor knowledge use. In the context of this study, one participant pulled medical charts for 100 hypertensive patients who came to his hospital for care. The three participants at academic medical centers were able to use the electronic medical records to monitor knowledge use more frequently. One participant at an academic medical center used the electronic medical record to monitor hypertensive patients on a visit-by-visit basis, which was possible but more challenging with the paper-based records.

Another component of CKT is to evaluate outcomes. In hypertension management, the outcome is controlled hypertension, which means a BP of less than 140/90 according to the JNC 8 hypertension guidelines (JAMA Network, 2017). Other identified outcomes discussed by participants were patient complaints, drug therapy impact on co-morbidities, and the prevention of hypertension emergencies and strokes. Physicians in this study described how control beliefs (self-efficacy) influenced getting patients' BP controlled. All participants were able to describe at least one patient experience where the patient had positive outcomes and well-controlled BP. All participants were equally able to describe multiple patients who did not have positive outcomes, which resulted in uncontrolled BP, stroke, organ failure, and even death.

Important in CKT is the physician's ability to sustain knowledge use. The hypertensive patient population in Ghana made this aspect of CKT challenging, as patients missed follow-up medical appointments, sometimes for several months. The complexity of the patient's hypertension may call for physicians to adjust care frequently. Additionally, if the patient could not afford the recommended course of treatment, physicians had to adjust care and think of alternative solutions.

Control beliefs had an influence on what physicians perceived as barriers to knowledge use. Behavioral and normative beliefs had a notable influence on implementing interventions. While all three aspects of beliefs influenced clinical knowledge translation, this study found that background factors, specifically the culture and context of community served by the physicians, had more influence on CKT. The findings demonstrated that participants' behavioral beliefs showed that clinical practice guidelines were important, that evidence-based medicine was a measure of sound medical practice, and that the available guidelines could help some of their patients. Normative beliefs shared by participants were a consensus on the value of guidelines,

the importance of seeking consultation from senior colleagues, the impact of the low socio-economic status of their patients on access to care, and the need for local multi-center clinical trials and studies. Control beliefs were focused on the need for CME to be culturally and contextually relevant and interprofessional in nature.

None of these identified physician beliefs would impede CKT; however, many physicians did not follow guidelines. This research found that primary care physician non-adherence to clinical practice guidelines was not due to a lack of belief in the value of the guidelines or validity of the evidence; rather, it was due to the background factors of culture and context that contribute to delays in seeking medical care and the lifestyle risk factors for hypertension. In terms of hypertension in Ghana, the beliefs of patients seem to outweigh the beliefs of physicians, causing delayed medical care and resulting in organ damage, complex hypertension, stroke, and death. As Aborigo, Allotey, Tindana, Azongo, and Debpuur (2013) reported in their qualitative study on the use of WHO guidelines for verbal autopsies in rural Ghana, guidelines void of local context may not only be ineffective but may impede care.

Implications for Policy

Three considerations for policy present themselves in the study findings. There is a need: (a) for patient education, (b) for national, multi-center clinical trials and studies that are published in peer-reviewed journals, and (c) to consider the socioeconomic status of the patient population. These policy considerations for the Republic of Ghana's Ministry of Health and Ghana Health Services may contribute to improved health outcomes for current hypertensive patients and contribute to the prevention of the disease as well.

Given Ghana's medically pluralistic society and the related health outcomes for hypertensive patients, formal efforts toward patient education, including the education of

traditional medicine practitioners and spiritual leaders, should be developed and broadly deployed. Culturally and contextually speaking, traditional medical practitioners and spiritual leaders are the first providers of medical advice and care. Barimah (2013) reported challenges within the traditional medical practitioner community in Ghana as to what information is shared for the benefit of population health and what information is kept secret as per the traditions of indigenous medicine.

Therefore, it is important that these persons be well educated as to the true causes of hypertension, the myths surrounding hypertension, and the lifestyle modifications that contribute to disease prevention and disease management. Study participants also suggested that community leaders, such as tribal chiefs and district assemblymen, also be educated on hypertension. This desire for patient and community education on the part of study participants spoke to their normative beliefs where they see the communities they serve as normative reference groups. The groups include community leaders, spiritual leaders, patients, and patient families. The physicians in this study identified with the communities they serve as well as with their medical peers. This recommendation also speaks to the study participants' control beliefs, as they feel they were responsible for educating the patients and their communities.

Barimah (2013), claims that 70% of Ghanaians receive their medical care from traditional medical practitioners due to limited access to modern medical facilities, shortages of orthodox medical practitioners, lack of financial resources, and deeply rooted cultural tradition. Patient education could be designed to overcome some of these barriers to accessing modern health care. Patient education is critical, as communities were bombarded with information and advertisements regarding various remedies that promise cures for hypertension. Therefore, the Ghana Health Service may wish to consider updating the training of healthcare workers located

at community-based health planning and services (CHPS) compounds and providing those workers with culturally and contextually relevant patient education materials.

The need for patient education was related to the second policy recommendation of the need for national multi-center clinical trials and studies. The study findings suggest a strong interest in and need by primary care physicians to use evidence-based medicine that is derived from Ghana and less from overseas. Harrison et al. (2013) report that lack of access to diagnostic tests, medicines, and medical equipment were typically the first considerations as to why some physicians may or may not adhere to guidelines. However, Harrison et al. (2013) go further to argue that best evidence, as described in guidelines, may not be acceptable to the local patients or clinicians. This study confirms this claim. It should be noted, that as the evidence-base behind the guideline recommendations was not provided in the Ghana standard treatment guidelines, one cannot conclude definitively that no local research was used in the development of the guidelines. Therefore, to change physician beliefs pertaining to the evidence-base of local guidelines and potentially increase adherence, guideline developers may consider including the evidence behind the guidelines as an online resource.

Study participants described the need for national studies focused on understanding the perceptions of Ghanaian patients. Some participants in the study acknowledged the use of Blacks and African Americans in foreign-published studies and guidelines. However, these same participants acknowledged the genetic differences between African Americans and Ghanaians, as well as the differences in diet, climate, and environmental factors, which all contribute to hypertension. McNutt and Livingston (2010) caution that generalizing research findings outside of the clinical context specific to the same context of the study was dangerous. Therefore, locally

derived research that incorporates the Ghanaian clinical context was identified by this study as a significant need of physicians and should serve as the basis for local practice guidelines.

This implication addressed the physicians' behavioral beliefs as to what they believed is best for their patients and what they believed to be sound clinical evidence. The need for local clinical trials and studies also spoke to control beliefs, as study participants reported they would have more confidence in using knowledge that was locally derived.

Findings from this study call for clinical research and investigations into herbal remedies. Primary care physicians did not know what the herbal preparations contain, nor were they aware of how the ingredients in herbal preparations interact with certain antihypertensive medications, or the impact the ingredients had on blood pressure control. Izzo, Di Carlo, Borrelli, and Ernst (2005) claim that when the mechanism of action of an herb was unknown, the outcome can be dangerous to patients. All physicians in this study were aware that many patients take herbal remedies along with antihypertensive medications despite the physicians' best efforts to educate patients not to continue taking herbal remedies. If primary care physicians were provided evidence-based literature on the specific herbs prevalent in Ghana, the physicians could make better informed patient care decisions, and patients could be educated about herbal remedies appropriately.

As many patients used herbal remedies due to the cost of antihypertensive medications, a third and related policy consideration is the cost of care due to the socioeconomic status of the Ghanaian patient population. Ghana has a National Health Insurance Scheme (NHIS) that includes medications from the World Health Organization's essential medicines list. These medications were provided at reduced cost to patients through hospitals and pharmacies (chemical shops) that accepted the national health insurance. These medications were then listed

in the Ghana standard treatment guidelines, which provided primary care physicians with a list of what antihypertensives were available in-country and covered by the NHIS.

Participants in this study believed that the list of antihypertensive medications listed in local guidelines were contingent upon the cost of care the government can afford. Therefore, participants believed that some of the medications that would enable them to control blood pressure effectively were not included in the NHIS due to cost. Some participants called for a slight increase in premiums to expand the medications options available to achieve blood pressure control.

Tugwell, Robinson, Grimshaw, and Santesso (2006) noted the difference in the utilization of clinical interventions between the very poor compared to the wealthy within a country. This was seen in this study. Three participants mentioned patients with private insurance or patients with the ability to afford antihypertensives not available in-country. Some of these patients ordered medications from Britain or the United States and had them shipped into Ghana. Primary care physicians working with these patients were better able to adhere to guidelines and achieve blood pressure control. Those patients without private insurance or of low socioeconomic status endured a pill burden where they were given the maximum dosage of various antihypertensives with limited effectiveness and no access to medications that could provide improved blood pressure control.

Additionally, laboratory tests, radiology exams, and other investigations were not covered by the NHIS at the time of this study. Therefore, patients needed to pay out of pocket prior to having tests or imaging performed. While all guidelines referenced by participants call for specific investigations, the inability of patients to afford those investigations impeded primary care physicians' ability to adhere to guidelines and provide optimum care. Uncontrolled

hypertension could lead to organ damage including chronic kidney disease, which requires regular kidney dialysis. Study participants shared that dialysis was not covered by NHIS. A national policy that invests resources in the prevention of hypertension and the effective management of hypertension can reduce the burden of disease and its associated complications of chronic kidney disease, heart disease, and stroke.

The NHIS could not be the sole support of hypertension prevention and management. As one participant pointed out, there was an increase in fitness centers as a growing industry in Ghana. However, there was a need for social structures, such as the development of parks, public walkways, and bicycle paths. The road infrastructure in Ghana was poor and unsafe for pedestrian traffic. An investment in health/exercise-related infrastructure would support the lifestyle modifications called for in hypertension guidelines, particularly for patient with a low socioeconomic status who cannot afford fitness center memberships.

Implication for Educational Practice of CME

A critical implication for CME is the need to intentionally incorporate culture and context into the content of CME in Ghana and perhaps all of Sub-Saharan Africa. Findings suggest it was not sufficient to reiterate clinical practice guidelines from various parts of the world; it was essential to specifically address the realities “on the ground.” Of the known available research in Sub-Saharan African CME, the research was focused on knowledge acquisition and course format preferences (Kasvosve et al., 2014; Entsua-Mensah, Doku, & Adzamli, 2012; Desalu et al., 2011; Muula et al., 2004). The Ghanaian study by Mock, Quansah, Addae-Mensah, and Donkor (2004) was one of the few published CME studies from Sub-Saharan Africa with educational outcomes. However, none of these studies addresses culture and context. The Achonduh et al. (2014) study of non-complicated malaria provided in-depth discussion on the

inclusion of culture and context in the training healthcare professionals and the related health outcomes.

Thus, the findings in this study highlighted that effective clinical knowledge translation in Ghana could be facilitated by CME content that was culturally and contextually relevant. Six participants in this study participated in an accredited CME focused on hypertension within two months of being interviewed for this study, with a seventh participant attending a course earlier in 2018. All seven of these participants shared with what they learned from attending these courses. Each shared an appreciation for learning the latest advancements in hypertension management; however, the content that seemed to resonate with the physicians the most were the aspects that dealt directly with improving patient interactions.

The CME content that spoke to practicing with a high degree of suspicion for hypertension and its complications was mentioned along with taking a more involved medical history. The CME content that also covered the secondary courses of hypertension, again requiring a more involved medical history, was highlighted, along with the importance of CME content that addressed the need to take time to counsel/educate patients on specific aspects of hypertension. These aspects of clinical knowledge were the ones participants were interested in implementing into their practice. All seven participants acknowledged that given the high volume of patients, taking the time to talk with patients would be challenging.

The knowledge gained and translated from these various CME activities may have been indirectly related to various guidelines. Furthermore, considering the cultural realities surrounding patient perspectives about hypertension, the Ghanaian diet, and Ghanaian concepts of wealth and beauty, CME content that addresses how to deal with these issues (patient history and counseling) were useful to primary care physicians.

Primary care physicians are part of a care team, and participants shared the importance of interprofessional continuing education. Many patients' hypertension was managed by physician assistants or community health workers (nurses). At least four participants mentioned the need for their healthcare colleagues to engage in CME so that all persons on the care team were equally informed as to best practices in hypertension management. The findings in this research suggests a disconnect between how physicians manage hypertension and how other healthcare professionals do. According to this study, many physician assistants and nurses accept elevated blood pressure as appropriate for hypertensive patients and therefore may not control those patients' blood pressure effectively. Some participants even reported patients being taken off blood pressure medications by other healthcare professionals if the patient's blood pressure measurement was normal during that visit.

CME should not solely be in the form of lectures and formal courses, as was often the case in Ghana. There is an opportunity for interprofessional continuing medical education in Ghana and throughout Sub-Saharan Africa in the form of hypertension case review conferences that could include the physicians, physician assistants, nurses, dietitians, and clinical pharmacologists. In regular intervals, such as once a month, the care team could meet to review and discuss cases of complicated hypertension, hypertension with co-morbidities, and stroke patients. The academic institutions in Ghana do have clinical meetings that include the case review conference format; however, this format of CME should be extended to other healthcare facilities and be disease focused.

Implications for CME Research

The findings from the study present a unique opportunity to formalize the use of CME as a feedback loop in the development and implementation of clinical practice guidelines in the

developing world, particularly in Sub-Saharan Africa. A number of Sub-Saharan countries have formal CME accreditation systems that require various healthcare professionals to earn a specific number of CME credits/points each year. Thus, CME systems were already in place to provide substantive feedback through course evaluations and commitment-to change-statements as to the (a) effectiveness of implementing practice guidelines, (b) barriers to guidelines adherence, and (c) recommendations from healthcare professionals as to how to overcome those barriers.

A standardization of two to three post-course questions could be required as a component of the application for CME credit process. As Ghana has a central accreditation system administered by the Ghana Medical and Dental Council, this information could be centrally gathered and used as feedback to the Ministry of Health for consideration in the development of updates to the standard treatment guidelines. Table 2.1 of this research lists the hypertension courses approved by the Ghana Medical and Dental Council in 2018. The seven hypertension-focused courses were held on 11 occasions. By having each course implement a standard two or three evaluation questions regarding course content could provide useful information from a variety of healthcare professionals who work in diverse healthcare settings throughout the country of Ghana.

Limitations

A limitation of this qualitative study includes the sample size of 10 primary care physicians. All primary care physicians in Ghana were welcome to participate in the study, however, physicians whose medical training included the alternative medicine program at the Kwame Nkrumah University of Science and Technology were not represented in the study sample. Therefore, the findings represent physicians with formal training in alternative medicine who may have differing beliefs. Other medical specialists who care for hypertensive patients,

such as cardiologists and nephrologists, were not part of this study. Further, primary care in Ghana included a dependency on physician assistants, who receive different training than physicians and manage patients independently in Ghana. They were also not part of this study.

The focus of this study was on hypertension in adults, and some participants in this study mentioned the increase they are seeing of hypertension in adolescents, who was excluded from this study as the guidelines are different for managing hypertension in children. Ghana's economic and political stability, coupled with its natural resources that include gold, means that Ghana may have resources that may not be as available in other countries in Sub-Saharan Africa. Therefore, while the research process of utilizing the Theory of Planned Behavior to identify the beliefs of a specific specialty of physicians pertaining to a particular disease may be generalizable, the findings of this study are very likely uniquely Ghanaian.

The theoretical framework of the Theory of Planned Behavior focused on specific beliefs that the theory claims contributes to intentions and thus influence behaviors. Therefore, other factors outside of TPB such as non-salient beliefs were not part of this study. Further, given the complexity of medical care, patient privacy, and study time constraints, access to patient data was not part of this study design. However, patient data if or when collected, might allow for an investigation into the direct impact of clinical knowledge translation. Future studies within this topic area could include a linkage between physician beliefs and patient outcomes. Finally, the focus of the study was on hypertension in adults and did not consider hypertension in pregnancy or hypertension in children as pregnant women and children are considered special populations.

Conclusion

Study participants show a deep commitment to patient care and a desire to practice evidence-based medicine to address the needs of clinically complex patients. Utilizing the theory

of planned behavior provided a window into the intricate workings of how various background factors influence what physicians believed to be (a) beneficial or harmful to their patients (behavioral beliefs); (b) their senior colleague's perspectives and what their patients believe and do (normative beliefs); and (c) in their power to control such as patient education and making clinical choices based on available resources (control beliefs).

Policy recommendations outlined in this chapter state an opportunity to provide more NHIS medicine options physicians believe provide more effective BP control, increase guideline adherence by providing the evidence-base behind local guidelines, and expanded patient education initiatives. This should include collaboration with national and local municipalities to create social structures like parks and safe walking/bicycling paths to support the needed lifestyle modifications.

There is an opportunity to marry policy and education by using CME as a feedback loop for clinical practice guideline development. With a centralized CME system, Ghana could experiment with standard CME evaluation questions that could provide guideline writers with substantive feedback on how physicians are or are not using guidelines. Lastly, CME professionals who invest in incorporating culture and context into the instructional design of CME, should see an improvement in clinical knowledge translation.

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Appendix A: Ghana - Hypertension Guidelines

The Republic of Ghana Ministry of Health - Standard Treatment Guidelines, Sixth Edition, 2010.

39. HYPERTENSION

HYPERTENSION IN ADULTS

This is a condition in which the blood pressure of an adult is persistently higher than 140/90 mmHg in a non-diabetic, or above 130/80 mmHg in a diabetic, based on the average of two or more properly measured blood pressure readings.

Hypertension carries an increased risk of early death from stroke, heart attack, heart failure and kidney failure if not properly controlled. Once a diagnosis of hypertension is made, the individual should be evaluated for the cause of hypertension. Most adults, however, tend to have primary hypertension.

Most patients with hypertension will require two or more antihypertensive medications to achieve the desired target blood pressure. The choice of medication(s) is influenced by individual patient factors such as age, sex, cardiovascular risk, associated medical conditions and adverse effects.

CAUSES

- Primary hypertension – In the majority of patients no specific underlying cause is identified. Risk factors associated with this type of hypertension include increasing age, family history, excess body weight, excessive alcohol intake.
- Secondary hypertension – In about 10% of cases, hypertension may be due to a kidney disease, endocrine disorder, renal artery stenosis or coarctation of the aorta.

SYMPTOMS

- There are no complaints that are specific for hypertension. Most patients with hypertension may have no complaint whatsoever and are discovered by chance during medical examinations.
- Occasionally, patient may complain of:
 - Headache
 - Palpitation
 - Dizziness
 - Easy fatigability

SIGNS

- Blood pressure of >140/90 mmHg
- Signs specific for the various kidney, endocrine and blood vessel disorders that cause secondary hypertension.

INVESTIGATIONS

- FBC
- Urinalysis
- Blood urea, electrolytes and creatinine
- Blood glucose

- Serum lipids
- Serum uric acid
- Chest x-ray
- ECG
- Ultrasound scan of kidneys and adrenals (in suspected secondary hypertension)

TREATMENT

Treatment objectives

- To reduce blood pressure levels to 140/90 mmHg or less (130/80 mmHg or less in diabetics)
- To prevent cardiovascular, cerebrovascular and renal complications
- To identify and manage secondary hypertension appropriately

Non-pharmacological treatment

- Reduce salt intake
- Reduce animal fat intake
- Ensure regular fruit and vegetable intake
- Weight reduction in obese and overweight individuals
- Regular exercise e.g. brisk walking for 30 minutes 3 times a week
- Reduction in alcohol consumption
- Cessation of smoking

Pharmacological treatment (Evidence rating: B)

Antihypertensive Class	Comments
Thiazide diuretics Bendroflumethiazide (bendrofluazide), oral, 2.5 mg daily	<ul style="list-style-type: none"> • Use with caution in gout, diabetes mellitus and dyslipidemia • Enhances effectiveness of other classes of antihypertensives when used in combination
Beta-blockers Atenolol, oral, 50-100 mg daily Or Bisoprolol, oral, 5-20 mg daily Or Carvedilol, oral, 6.25-25 mg 12 hourly	<ul style="list-style-type: none"> • Useful in angina and post myocardial infarction (when not contraindicated) • Avoid in asthma, chronic obstructive pulmonary disease and heart block
Angiotensin-converting enzyme (ACE) inhibitors Lisinopril, oral 5-40 mg daily Or Ramipril, oral, 2.5-10 mg daily	<ul style="list-style-type: none"> • Avoid in pregnancy and renovascular diseases • Can be used in heart failure, diabetes nephropathy and left ventricular dysfunction • Commonest side effect is dry persistent cough

	<ul style="list-style-type: none"> • Monitor serum potassium level periodically
Angiotensin receptor blockers Losartan, oral, 25-100 mg daily Or Candesartan, oral, 4-32 mg daily Or Valsatan, oral, 80-160 mg daily	<ul style="list-style-type: none"> • Useful alternative to ACE inhibitors when dry persistent cough is a problem • Monitor serum potassium level periodically
Calcium channel blockers Nifedipine retard, oral, 10-40 mg 12 hourly Or Amlodipine, oral, 5-10 mg daily	<ul style="list-style-type: none"> • Particularly useful in isolated systolic hypertension • Short acting formulations should not be used (see Hypertensive emergencies)
Alpha blockers Prazosin, oral, 0.5-20 mg in 3 divided doses starting at an initial dose of 0.5 mg 8-12 hourly and increasing gradually.	<ul style="list-style-type: none"> • Usually used with other antihypertensives • First dose given at night to avoid hypotension
Centrally acting agents Methyldopa, oral, 250 mg-1g 8-12 hourly	<ul style="list-style-type: none"> • Effective in the treatment of hypertension in pregnancy • May be used in asthma and heart failure
Vasodilators Hydralazine <u>Adults</u> Oral, 25-50 mg 12 hourly Slow IV injection over 20 minutes, 50-10 mg diluted with 10 ml Normal Saline. Repeat after 20-30 minutes if necessary	<ul style="list-style-type: none"> • Used in combination with other antihypertensives • Useful in hypertension associated with pregnancy • Used in hypertensive emergencies

REFER

Refer the following categories of hypertensive patients to an appropriate specialist:

- Those not achieving the target blood pressure (BP) level after several month of treatment
- Those on three or more anti-hypertensive drugs, yet have poor BP control
- Those with worsening of BP over a few weeks of months
- Those with plasma creatinine levels above the upper limit of normal
- Those with diabetes mellitus
- Those with multiple risk factors (diabetes, dyslipidemia, obesity, family history of heart disease)
- Those not on diuretics but have persistently low potassium on repeated blood tests
- All children, young adults and pregnant women with elevated BP

59. Hypertension

Hypertension or ‘high blood pressure’ carries an increased risk of early death from stroke, heart attack, heart failure and kidney failure if it is not detected early or properly controlled. Owing to this, the focus must be on when to initiate treatment, rather than how hypertension should be defined.

Since there are often no specific symptoms associated with hypertension, there is a need for regular blood pressure (BP) screening in the adult population for early detection.

In the general adult population, treatment must be initiated at a BP of 140/90 mmHg or higher for individuals below 60 years of age, and 150/90 mmHg or higher in those above 60 years. For individuals with diabetes mellitus or non-diabetes with Chronic Kidney Disease (CKD), treatment for hypertension must be initiated at a BP of 140/90 mmHg irrespective of age.

In the majority of patients with hypertension, no specific underlying causes is identified (primary hypertension). In these individuals, increasing age, family history, excess body weight, lack of physical activity and excessive alcohol intake may be possible predisposing factors. In about 10% of cases of hypertension, there may be an underlying kidney disease, endocrine disorder, renal artery stenosis or coarctation of the aorta (secondary hypertension).

Once a diagnosis of hypertension is made, the individual should be evaluated to exclude secondary causes and to identify other existing cardiovascular risk factors e.g. diabetes, dyslipidaemia, hyperuricaemia, etc.

Box 7-6: Cardiovascular Risk Factors

- Age (men \geq 55 years; women \geq 65)
- Family history of premature cardiovascular disease (men aged $<$ 55 years; women aged $<$ 65)
- Dyslipidaemia
- Obesity (BMI \geq 30 kg/m²)
- Diabetes mellitus
- Smoking
- Pulse pressure (in the elderly) \geq 60mmHg
- Microalbuminuria or proteinuria
- Left ventricular hypertrophy
- Left bundle branch block and other electrocardiographic features suggestive of ischaemic heart disease
- Previous stroke or transient ischaemic attack
- Preperal arterial disease
- Heart failure
- Coronary artery disease
- Chronic kidney disease
- Advanced retinopathy: haemorrhages or exudates, papilloedema

CAUSES

- Primary hypertension
- Secondary hypertension
 - Kidney related – CKD, polycystic kidney disease
 - Endocrine – phaeochromocytoma, Cushing's syndrome, Conn's syndrome, hypothyroidism, hyperthyroidism, acromegaly
 - Vascular – renal artery stenosis, coarctation of the aorta

SYMPTOMS

- Usually none
- Occasionally,
 - Headaches
 - Palpitations
 - Dizziness
 - Easy fatiguability

SIGNS

- Blood pressure \geq 140/90 mmHg
- Displaced apex beat
- Signs pointing to a specific cause for secondary hypertension

INVESTIGATIONS

- FBC
- Urinalysis
- Blood urea, electrolytes and creatinine
- Blood glucose
- Serum lipids
- Serum uric acid
- Chest X-ray
- 12-lead ECG
- Ultrasound scan of kidneys and adrenals (in suspected secondary hypertension)
- Echocardiogram)

TREATMENT

Treatment objectives

- To reduce blood pressure levels to recommended targets:
 - <140/90 mmHg for age below 60 years, diabetes, CKD
 - <150/90 mmHg for age above 60 years
- To manage co-morbid conditions e.g. obesity, diabetes, lipids, etc.
- To prevent cardiovascular, cerebrovascular and renal complications
- To promote therapeutic lifestyle changes e.g. smoking cessation, regular physical activity, reduction in alcohol intake
- To identify and manage secondary hypertension appropriately

Non-pharmacological treatment

- Reduce salt intake
- Reduce animal fat intake
- Ensure regular fruit and vegetable intake
- Weight reduction in obese and overweight individuals
- Regular exercise e.g. brisk walking for 30 minutes 3 times a week
- Reduction in alcohol consumption
- Avoid or quit smoking

Pharmacological treatment

A. Treatment of hypertension

1st Line Treatment

Evidence Rating: [A]

Box 7-7: Notes on anti-hypertensive medicines

Any of the five classes of major antihypertensive drugs can be used as first-line treatment. There are:

- Thiazide Diuretics
- Calcium Channel Blockers
- Angiotensin Converting Enzyme Inhibitors
- Angiotensin Receptor Blockers
- Beta-blockers

In the general black population thiazide diuretics or calcium channel blockers, either as monotherapy or in some combination therapy, is preferable. Angiotensin converting enzyme Inhibitors are not recommended as first-line drugs for uncomplicated hypertension in black patients.

Dual therapy should be started earlier when the blood pressure exceeds 180/110 mmHg. Additional anti-hypertensive drugs should be used if target blood pressure levels are not achieved. Add-on drugs should be chosen from first-line choices bearing in mind compelling indications and contraindications.

Compelling indication for the choice of antihypertensives

- Left ventricular hypertrophy: ACE-I or ARB, CCB preferably Amlodipine
- Microalbuminuria: ACE-I or ARB
- Renal dysfunction: ACE-I or ARB; Caution- if eGFR <15 ml/min without renal replacement therapy
- Previous stroke: Any of the first-line drugs, especially ACE-I
- Coronary artery disease (Angina/Myocardial infarction): ACE-I or ARB, Beta-blocker, CCB
- Heart failure: ACE-I or ARB, Cardio-selective B-Blockers- Bisoprolol, metoprolol, carvedilol; Loop diuretics, Spironolactone in advanced heart failure
- Peripheral artery disease: CCB, ACE-I or ARB

- Diabetes mellitus: ACE-I or ARB
- Atrial fibrillation: ARB or ACE-I or B-blockers

Compelling Contraindications

- Gout: Thiazide diuretics
- Beta-blockers: Asthma, 2 and 3 AV block
- CCB: Heart failure
- ACE-I or ARB: Bilateral renal artery stenosis and hyperkalaemia

Thiazide Diuretics:

- Bendroflumethiazide, oral, 2.5 mg daily

Or

- Hydrochlorothiazide, oral, 12.5 mg-25 mg daily

And/Or

Calcium Channel Blockers:

- Amlodipine, oral 5-10 mg daily

Or

- Nifedipine retard, oral, 10-40 mg 12 hourly

And/Or

Angiotensin-converting enzyme (ACE) inhibitors

- Lisinopril, oral, 5-40 mg daily

Or

- Ramipril, oral, 2.5-10 mg daily

Or

Angiotensin receptor blockers

- Losartan, oral, 25-100 mg daily

Or

- Candesartan, oral, 4-32 mg daily

Or

- Valsartan, oral, 80-160 mg daily

And/Or

Beta-blockers:

- Atenolol, oral, 50-100 mg daily

Or

- Metoprolol, oral, 50-200 mg 12 hourly

Or

- Carvedilol, oral, 12.5-50 mg daily

Or

- Labetalol, oral, 100-400 mg 12 hourly

2nd Line Treatment

Evidence Rating: [C]

Centrally acting agents

- Methyldopa, oral, 250 mg-1g 8-12 hourly

And/Or

Vasodilators

- Hydralazine, oral, 25-50 mg 12 hourly

And/Or

Alpha-blockers

- Prazosin, oral, 0.5 mg 8-12 hourly and increasing gradually to a max. dose of 20mg

And/Or

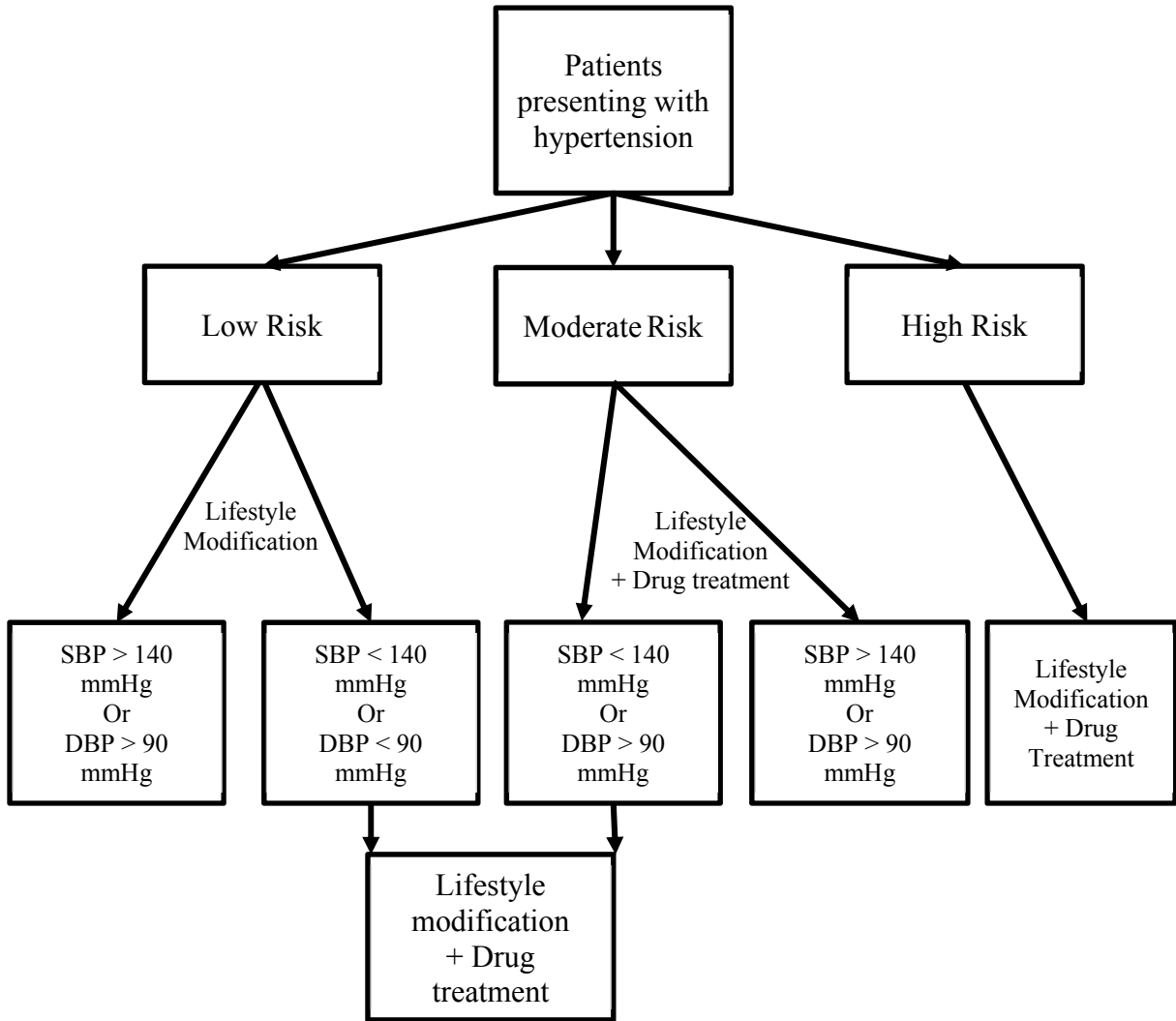
Aldosterone antagonists

- Spironolactone, oral, 25-50 mg daily

REFERRAL CRITERIA

Refer the following categories of hypertensive patients to an appropriate specialist:

- Those not achieving the target blood pressure (BP) level after several months of treatment
- Those on three or more anti-hypertensive drugs, yet have poor BP control
- Those with worsening of BP over a few weeks or months
- Those with plasma creatinine levels above the upper limit of normal
- Those with diabetes mellitus
- Those with multiple risk factors (diabetes, dyslipidaemia, obesity, family history of heart disease)
- Those not on diuretics but have persistently low potassium on repeated blood tests
- All children, young adults and pregnant women with evaluated BP



Appendix B: Interview Questions

Interview Script

Hello Dr. XXXXX, how are you? This is Linda Caples calling regarding our scheduled interview. Thank you for your time and participation in this study. The purpose of this qualitative study is to employ the Theory of Planned Behavior (TPB) to identify and explore key themes that underlie how primary care physicians' (PCP) beliefs influence clinical knowledge translation in the care of hypertensive patients living in Ghana. This study aims to investigate PCP attitudes and beliefs concerning clinical practice guidelines as well as perceived implementation barriers and enablers.

I anticipate this interview will take one hour. I emailed you a copy of the hypertension guidelines I will be referring to. Do you have them available? If not, I can resend. If you need or wish to conclude the interview any time, you are welcome to do so. Also, as a reminder, I am recording this interview, however if you do not wish to be recorded, I will not do so. Are you comfortable with me recording?

Just a little about my background (short bio).

Before we proceed, do you have any questions for me?

Introductory questions for interviews

- Where did you receive your medical training?
- Where do you practice medicine?
- How many years have you been practicing medicine?
- Describe your typical clinical experience care for hypertensive patients?
- Describe your most memorable clinical experience caring for a hypertensive patient?

RESEARCH QUESTIONS	INTERVIEW QUESTIONS
<p>How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?</p>	<p>Describe the support you receive when it comes to adhering to hypertension guidelines? (Normative beliefs)</p> <p>Who are some of the people who encourage (discourage) adherence to guidelines? (Normative beliefs)</p> <p>What would you like your peers to do when it comes to managing hypertension? (Normative beliefs)</p>
<p>How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to cultural and contextual beliefs systems that they hold?</p>	<p>Given that the guidelines were published in 2010, do you believe the guidelines are still relevant to your clinical practice? If so or if not, how? (behavioral beliefs)</p> <p>Can you tell me of examples where the guidelines were useful to your practice? Why do you believe they were useful? (behavioral beliefs)</p> <p>Can you tell me of examples where the guidelines were not useful to your practice? Why do you believe there were not useful? (behavioral beliefs)</p>
<p>How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?</p>	<p>Describe some of the obstacles you are faced with when it comes to adhering to the hypertension guidelines. (Control beliefs)</p> <p>Describe the strategies you try to use to overcome those barriers. (Control beliefs)</p> <p>How might the lack of herb-drug interaction evidence within the guidelines affect your use of the guidelines? (behavioral beliefs)</p>

<p>How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?</p>	<p>It's been a few months since the hypertension course. Can you share if and if so, how you changed your care of hypertension patients since the course?</p> <p>What did you learn that lead you to do things differently? (Note items related to specific aspects of the guidelines and items not related to guidelines)</p> <p>How do you feel about making the changes?</p> <p>Can you describe for me how the way you take care of HTN patients now works better for your clinical environment than before? (behavior beliefs)</p> <p>(If they haven't made any changes) Can you please share why you didn't change your care of hypertensive patients since the course?</p> <p>What additional questions do you have about hypertension since taking the course, if any?</p> <p>Is there additional training would you need in order to better comply with guidelines? If so, what should the training include?</p>
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Is there anything else I should have asked you?

Follow-Up Interview Questions

Good day to you all. Thank you for your time and participation in this follow-up interview. As a reminder, the purpose of this qualitative study is to employ the Theory of Planned Behavior (TPB) to identify and explore key themes that underlie how primary care physicians' (PCP) beliefs influence clinical knowledge translation in the care of hypertensive patients living in Ghana. This study aims to investigate PCP attitudes and beliefs concerning clinical practice guidelines as well as perceived implementation barriers and enablers. Also, as a reminder, I am recording this interview. Before we proceed, do you have any questions for me?

RESEARCH QUESTIONS	FOLLOW UP QUESTIONS
<p>How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?</p>	<p>Now that you've completed the hypertension workshop, what changes do you plan to make to your care of patients with hypertension? Why?</p> <p>What are the attitudes of primary care physicians in Ghana when it comes to integrating guidelines into the management of hypertension? (Normative beliefs)</p> <p>Describe situations where the guidelines are useful. Describe situations where the guidelines are not useful. (behavioral beliefs)</p> <p>How are the guidelines beneficial to patients (behavioral beliefs)</p> <p>How might adhering to guidelines be harmful to patients (behavioral beliefs)</p> <p>Given the context of healthcare in Ghana, do you believe these guidelines fit this context? Why or why not?</p>

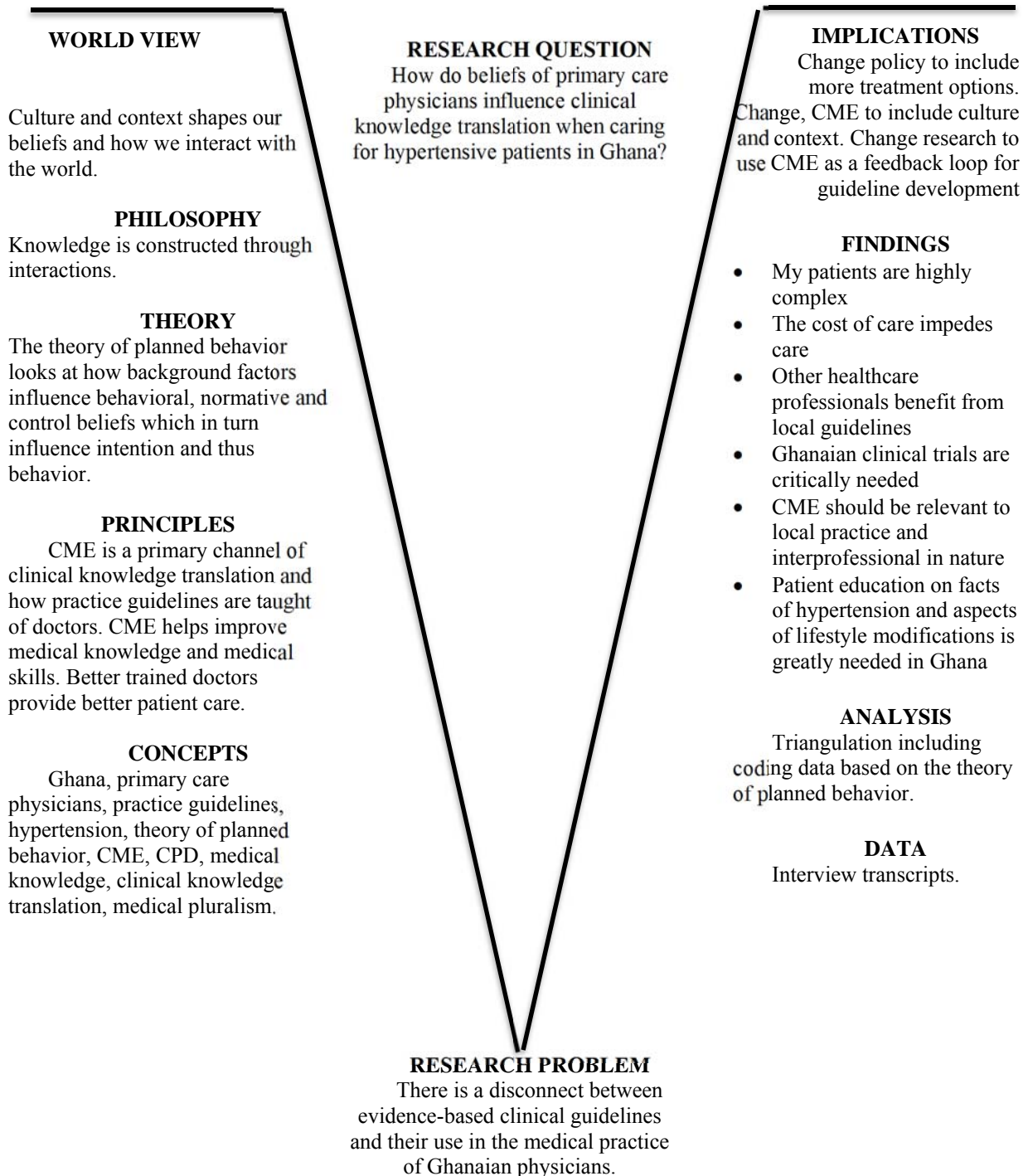
<p>How do Ghanaian primary care physicians describe hypertension clinical practice guidelines in relationship to cultural and contextual beliefs systems that they hold?</p>	<p>Describe the support you receive when it comes to adhering to hypertension guidelines? (Normative beliefs)</p> <p>How do other PCP in Ghana use the hypertension guidelines in practices? Are there parts they use? Are there parts they do not use? Why or why not? (Normative beliefs)</p> <p>Describe any consequences (good or bad) a PCP may experience when it comes to adhering to the guidelines. (Normative beliefs)</p> <p>Who are some of the people who encourage (discourage) adherence to guidelines? (Normative beliefs)</p>
<p>How do these physicians describe the cultural and contextual drivers of hypertension in Ghana?</p>	<p>Describe some of the obstacles you are faced with when it comes to adhering to the hypertension guidelines. (Control beliefs)</p> <p>Describe the strategies you try to use to overcome those barriers. (Control beliefs)</p> <p>What would PCPs need in order to adhere to guidelines with confidence? (Control beliefs)</p>
<p>How do or how could CME courses integrate culture and context in a manner that would be considered clinically valid by Ghanaian primary care physicians?</p>	<p>Describe additional knowledge the PCPs may need in order to increase their capabilities for adhering to guidelines. (Control beliefs)</p> <p>What additional questions do you have about hypertension since taking the course? (Control beliefs)</p>

Is there anything else anyone would like to add?

Does anyone have a question for me?

Thank you all for participating in the research project. I provided you my contact information. If you have any questions or comments, please do not hesitate to contact me. Thank you again.

Appendix C: Vee Diagram



Appendix D: IRB Protocol

IRBManager Protocol Form

NOTE: If you are unsure if your study requires IRB approval, please review the UWM

IRB Determination Form.

Instructions: Each Section must be completed unless directed otherwise. Incomplete forms will delay the IRB review process and may be returned to you. Enter your information in the **colored boxes** or place an “X” in front of the appropriate response(s). If the question does not apply, write “N/A.”

SECTION A: Title

A1. Full Study Title:

SECTION B: Study Duration

AN INVESTIGATION OF HOW THE BELIEFS OF PRIMARY CARE PHYSICIANS IN GHANA INFLUENCE CLINICAL KNOWLEDGE TRANSLATION

B1. What is the expected start date? *Data collection, screening, recruitment, enrollment, or consenting activities may not begin until IRB approval has been granted. Format: 07/31/2011*

September, 2018

B2. What is the expected end date? *Expected end date should take into account data analysis, queries, and paper write-up. Format: 07/05/2014*

May, 2019

SECTION C: Summary

C1. Write a brief descriptive summary of this study in Layman Terms (non-technical language):

This study utilizes the theory of planned behavior to investigate influences of beliefs on clinical knowledge translation by primary care physicians as a component of improving health outcomes for patients living with hypertension in Ghana

C2. Describe the purpose/objective and the significance of the research:

This study aims to investigate primary care physicians’ attitudes and beliefs concerning clinical practice guidelines as well as perceived implementation barriers and enablers.

C3. Cite the most relevant literature pertaining to the proposed research:

De-Graft Aikins, A. (2007). Ghana's neglected chronic disease epidemic: A developmental challenge. Ghana Medical Journal, 41(4), 154-9

Dzudie, A., Rayner, B., Ojji, D., Schutte, A. E., Twagirumukiza, M., Damasceno, A., . . . Mayosi, B. (2017). Roadmap to achieve 25% hypertension control in Africa by 2025. *Global Heart*, doi:10.1016/j.ghheart.2017.06.001

Essuman, A., Lawson, H., Nortey, D., Gyakobo, M., Ofori-Amankwah, G., Ndanu, T. A., & Gold, K. J. (2017). Five years of family medicine undergraduate education in Ghana: A wake-up call! *Ghana Medical Journal*, 51(2), 50

SECTION D: Subject Population
<p>Section Notes...</p> <ul style="list-style-type: none"> D1. If this study involves analysis of de-identified data only (i.e., no human subject interaction), IRB submission/review may not be necessary. Please review the <u>UWM IRB Determination Form</u> for more details.

D1. Identify any population(s) that you will be specifically targeting for the study. Check all that apply: (Place an "X" in the column next to the name of the special population.)

Existing Dataset(s)		Institutionalized/ Nursing home residents recruited in the nursing home
UWM Students of PI or study staff		Diagnosable Psychological Disorder/Psychiatrically impaired
UWM Students (but not of PI or study staff)		Decisionally/Cognitively Impaired
Non-UWM students to be recruited in their educational setting, i.e. in class or at school		Economically/Educationally Disadvantaged
UWM Staff or Faculty		Prisoners
Pregnant Women/Neonates	X	International Subjects (residing outside of the US)
Minors under 18 and ARE NOT wards of the State		Non-English Speaking
Minors under 18 and ARE wards of the State		Terminally ill
Other (Please identify):		

D2. Describe the subject group and enter the total number to be enrolled for each group. For example: teachers-50, students-200, parents-25, student control-30, student experimental-30, medical charts-500, dataset of 1500, etc. Then enter the total number of subjects below. Be sure to account for expected drop outs. For example, if you need 100 subjects to complete the entire study, but you expect 5 people will enroll but "drop out" of the study, please enter 105 (not 100).

Describe subject group:	Number:
Primary Care Physicians who live and practice medicine full time in the country of Ghana	15

TOTAL # OF SUBJECTS:	15
TOTAL # OF SUBJECTS (If UWM is a collaborating site for a multi institutional project):	

D3. For each subject group, list any major inclusion and exclusion criteria (e.g., age, gender, health status/condition, ethnicity, location, English speaking, etc.) and state the justification for the inclusion and exclusion criteria:

Participants must be primary care physicians which include Family Medicine physicians and General Internal Medicine physicians who live and practice medicine in Ghana, West Africa on a full time basis. Other healthcare professionals and other medical specialists are excluded from this study. The focus of this study is on the beliefs of primary care physicians only.

SECTION E: Study Activities: Recruitment, Informed Consent, and Data Collection
Section Notes...
<ul style="list-style-type: none"> Reminder, all recruitment materials, consent forms, data collection instruments, etc. should be attached for IRB review. The IRB welcomes the use of flowcharts and tables in the consent form for complex/ multiple study activities.

In the table below, chronologically describe all study activities where human subjects are involved.

- In **column A**, give the activity a short name. Please note that Recruitment, Screening, and consenting will be activities for almost all studies. Other activities may include: Obtaining Dataset, Records Review, Interview, Online Survey, Lab Visit 1, 4 Week Follow-Up, Debriefing, etc.
- In **column B**, describe who will be conducting the study activity and his/her training or qualifications to complete the activity. You may use a title (i.e. Research Assistant) rather than a specific name, but training/qualifications must still be described.
- In **column C**, describe in greater detail the activities (recruitment, screening, consent, surveys, audiotaped interviews, tasks, etc.) research participants will be engaged in. Address **where**, **how long**, and **when** each activity takes place.
- In **column D**, describe any possible risks (e.g., physical, psychological, social, economic, legal, etc.) the subject may *reasonably* encounter. Describe the **safeguards** that will be put into place to minimize possible risks (e.g., interviews are in a private location, data is anonymous, assigning pseudonyms, where data is stored, coded data, etc.) and what happens if the participant gets hurt or upset (e.g., referred to Norris Health Center, PI will stop the interview and assess, given referral, etc.).

A. Activity Name:	B. Person(s) Conducting Activity	C. Activity Description (Please describe any forms used):	D. Activity Risks and Safeguards:
Recruitment	David Frempong	Creates flyers and organizes logistics for a continuing medical education course which will serve as the basis for recruitment. Recruitment begins in July,	Minimal risk as it is usual practice for Ghanaian physicians to attend continuing medical education courses. Course advertisements will

		2018 and consists of flyers at clinics and hospitals and large banners at hospitals.	include information about the study noting that participation in the study is voluntary.
Screening	Linda Caples	At the course registration desk, identify the participants who would qualify for the study. Review the study with them and ask if they are willing to participate.	Minimal risk as the only screening question is asking whether or not the participant is a primary care physician. This is commonly shared knowledge as the question is about their profession.
Obtaining Consent	Linda Caples	At the course registration desk, I will have consent forms available for those who agree to participate to complete and return to me on-site.	Minimal risk as the participants are highly educated and literate in English, as English is the national language of Ghana.
Hypertension Course	Michael Opong-Kusi, MD Linda Caples	Dr Opong-Kusi will instruct the course on hypertension in September of 2018. One course will be in Wenchi, Ghana and the other at Ankaase, Ghana. Linda Caples will observe the course and take notes.	Minimal risk as it is usual practice for Ghanaian physicians to attend continuing medical education courses. The course will be recorded for those who are not able to attend in person. This is also a usual practice in Ghana.
Focus Group	Linda Caples	Immediately following the course, a focus group of primary care physicians only will be held for approximately 60-90 minutes. Data will be stored on a hand-held recording device which will be stored securely in a locked cabinet in my home. Recordings will be erased at the conclusion of the research project. The focus group recordings will be transcribed using Dragon software and pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded.	There is some risk as participants will be talking amongst their peers. The focus group will be recorded as well which may make some participants uncomfortable. At the start of the session, I will repeat the purpose of the study, remind participants that the session is being recorded, and remind them that they are welcome to leave at any time they may wish.
Interviews	Linda Caples	In November, 2018, one-on-one interviews using Zoom or WhatsApp as a backup will be conducted. The interviews will be approximately 60 minutes each. The recording rooms of the UWM Library will be used to provide	Participants may share experiences about taking care of patients that may invoke feelings of frustration, anger or sadness. I will remind participants at the beginning of the

		<p>privacy. Data will be stored on a hand-held recording device which will be stored securely in a locked cabinet in my home. Recordings will be erased at the conclusion of the research project. Recordings will be transcribed using Dragon software and pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded.</p>	<p>interview, that participation is voluntary and anonymous. They are welcome to end the interview at any time. If I feel a participant is having an emotional response, I will pause the interview and ask if they would like to conclude or if they need a moment before we move on. All electronic data derived from the interviews will be stored on my personal home computer that is password protected.</p>
Data Analysis	Linda Caples	<p>In October, 2018, I will begin coding the focus group data using NVivo, Leximancer, and CMap tools which are password protected. In November and December, 2018, the coding of interview data will occur.</p> <p>Peer debriefing by the course instructor and a Family Medicine physician will occur on the aggregated (coded) data to confirm the voice of the participants is clearly represented.</p>	<p>No known risk to participants as pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded. All electronic data derived from the interviews will be stored on my personal home computer that is password protected.</p>
Findings & Conclusion	Linda Caples	<p>In November and December, 2018, I will write up the findings and conclusion of the study</p>	

E2. Explain how the data will be analyzed or studied (i.e. quantitatively or qualitatively) and how the data will be reported (i.e. aggregated, anonymously, pseudonyms for participants, etc.):

This is a qualitative dissertation that will report data in aggregated or with the use of pseudonyms.

SECTION F: Data Security and Confidentiality
<p>Section Notes...</p> <ul style="list-style-type: none"> Please read the IRB Guidance Document on Data Confidentiality for more details and recommendations about data security and confidentiality.

F1. Explain how study data/responses will be stored in relation to any identifying information (name, birthdate, address, IP address, etc.)? Check all that apply.

- Identifiable - Identifiers are collected and stored with study data.
- Coded - Identifiers are collected and stored separately from study data, but a key exists to link data to identifiable information.
- De-identified - Identifiers are collected and stored separately from study data without the possibility of linking to data.
- Anonymous - No identifying information is collected.

If more than one method is used, explain which method is used for which data.

F2. Will any recordings (audio/video/photos) be done as part of the study?

- Yes
- No [SKIP THIS SECTION]

If yes, explain what activities will be recorded and what recording method(s) will be used. Will the recordings be used in publications or presentations?

A DSLR camera will be used to record the course so that the course can be posted online so that other physicians may participate. The focus group and interviews will be audio recorded on a hand-held device (interviews with Zoom as well). The recordings will be transcribed and analyzed. They will not appear in publications or presentations.

F3. In the table below, describe the data storage and security measures in place to prevent a breach of confidentiality.

A. Type of Data	B. Storage Location	C. Security Measures	D. Who will have access	E. Estimated date of disposal
Audio recordings	Personal home computer	Non-networked computer that is Password protected	Linda Caples	May 2019
Video recording (course)	www.ocpemcw.edu	Access to the online course is available to those who register through Africa Partners Medical and receive an access code from Africa Partners Medical	Physicians who register for the course	September 2019
Video recording (Zoom)	Personal home computer	Non-networked computer that is Password protected	Linda Caples	May 2019

F4. Will data be retained for uses beyond this study? If so, please explain and notify participants in the consent form.

No data will be retained beyond this study.

SECTION G: Benefits and Risk/Benefit Analysis

Section Notes...

- Do not include Incentives/ Compensations in this section.

G1. Describe any benefits to the individual participants. If there are no anticipated benefits to the subject directly, state so. Describe potential benefits to society (i.e., further knowledge to the area of study) or a specific group of individuals (i.e., teachers, foster children).

There are no known direct benefits to individual participants. For Ghana, the Ministry of Health and medical leadership may use the information to revise clinical practice guidelines and continuing medical education providers in Ghana can use the information to improve the quality of the courses – both benefits have the ultimate goal of improving the care of patients living with hypertension.

G2. Risks to research participants should be justified by the anticipated benefits to the participants or society. Provide your assessment of how the anticipated risks to participants and steps taken to minimize these risks (as described in Section E), balance against anticipated benefits to the individual or to society.

Participation in continuing medical education is a standard practice for Ghanaian physicians and required for licensure to practice medicine. It is the culture of medical practice for physicians to discuss their clinical experiences. However, some times those experiences can be traumatic. Therefore, participants who have a strong emotional response during the focus group or interviews may stop the session at any time. They can choose to rejoin the conversation or end the conversation if that would be more comfortable. The end goal is to improve the care of patients by listening to the voice of physicians.

SECTION H: Subject Incentives/ Compensations

Section Notes...

- H2 & H3. The IRB recognizes the potential for undue influence and coercion when extra credit is offered. The UWM IRB, as also recommended by OHRP and APA Code of Ethics, agrees when extra credit is offered or required, prospective subjects must be given the choice of an equitable, non-research alternative. The extra credit value and the non-research alternative must be described in the recruitment material and the consent form.
- H4. If you intend to submit to Accounts Payable for reimbursement purposes make sure you understand the UWM “Payments to Research Subjects” Procedure 2.4.6 and what each level of payment confidentiality means ([click here for additional information](#)).

H1. Does this study involve incentives or compensation to the subjects? For example cash, class extra credit, gift cards, or items.

- Yes
- No [SKIP THIS SECTION]

H2. Explain what (a) the item is, (b) the amount or approximate value of the item, and (c) when it will be given. For extra credit, state the number of credit hours or points. (e.g., \$5 after completing each survey, subject will receive [item] even if they do not complete the procedure, extra credit will be award at the end of the semester):

H3. If extra credit is offered as compensation/incentive, please describe the specific alternative activity which will be offered. The alternative activity should be similar in the amount of time involved to complete and worth the same number of extra credit points/hours. Other research studies can be offered as additional alternatives, but a **non-research alternative is required.**

H4. If cash or gift cards, select the appropriate confidentiality level for payments (see section notes):

Level 1 indicates that confidentiality of the subjects is not a serious issue, e.g., providing a social security number or other identifying information for payment would not pose a serious risk to subjects.

- For payments over \$50, choosing Level 1 requires the researcher to collect and maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 1 is selected, a formal notice is not issued by the IRB and the Account Payable assumes Level 1.
- Level 1 payment information will be retained in the extramural account folder at UWM/Research Services and attached to the voucher in Accounts Payable. These are public documents, potentially open to public review.

Level 2 indicates that confidentiality is an issue, but is not paramount to the study, e.g., the participant will be involved in a study researching sensitive, yet not illegal issues.

- Choosing a Level 2 requires the researcher to maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 2 is selected, a formal notice will be issued by the IRB.
- Level 2 payment information, including the names, are attached to the PIR and become part of the voucher in Accounts Payable. The records retained by Accounts Payable are not considered public record.

Level 3 indicates that confidentiality of the subjects must be guaranteed. In this category, identifying information such as a social security number would put a subject at increased risk.

- Choosing a Level 3 requires the researcher to maintain a record of the following: research subject's name and corresponding coded identification. This will be the only record of payee names, and it will stay in the control of the PI.
- Payments are made to the research subjects by either personal check or cash. Gift cards are considered cash.
- If a cash payment is made, the PI must obtain signed receipts.
- If the total payment to an individual subject is over \$600 per calendar year, Level 3 cannot be selected.

If Confidentiality Level 2 or 3 is selected, please provide justification.

SECTION I: Deception/ Incomplete Disclosure (INSERT "NA" IF NOT APPLICABLE)

Section Notes...

- If you cannot adequately state the true purpose of the study to the subject in the informed consent, deception/ incomplete disclosure is involved.

II. Describe (a) what information will be withheld from the subject (b) why such deception/ incomplete disclosure is necessary, and (c) when the subjects will be debriefed about the deception/ incomplete disclosure.

NA

IMPORTANT – Make sure all sections are complete and attach this document to your IRBManager web submission in the Attachment Page (Y1).

Appendix E: International Research Form

International Research Form

Instructions: Complete this form if you will be doing research outside the US. Each Section must be completed. Enter your information in the **colored boxes** or place an “X” in front of the appropriate response. If the question does not apply, write “N/A.”

Throughout the form, “you/your” refers to the researcher who is traveling to the other country (whether PI, SPI or other)

SECTION A: Research Location

A1. In what country are you conducting research?

Ghana

A2. What region / province / state / town / city? (as applicable)

Wenchi, Ghana and Ankaase, Ghana

A3. List the name(s) of the researcher(s) who will be traveling to this country to conduct research.

Linda Caples

A4. Why was this location chosen?

Research of this nature has not been conducted in Ghana and the culture of medicine a conducive to this study.

A5. Have you been invited by local residents to do research here? Explain.

I have been invited by local residents to conduct research in continuing medical education. This is an extension of that work.

A6. Have your local contacts been involved in the research design and planning? Explain.

Yes. Africa Partners Medical has staff in Ghana – David Frempong. He is active in assisting with participant recruitment and logistics.

SECTION B: Language

B1. What language(s) do your potential research participants speak, and in what language will the research be conducted?

English is the national language of Ghana.

B2. Do you speak the language(s) listed above?

YES. Describe your proficiency level and experience with the language.

I am a native English speaker.

NO. Who will interpret / translate? What are his/her qualifications?

SECTION C: Researcher Qualifications

C1. What connections or experience do you have with this location?

I have conducted research in the field of continuing medical education in Ghana since 2015. I have spent time at both research sites on previous visits to Ghana.

C2. What qualifications do you have for conducting research internationally?

In addition to my current work in Ghana, I am working with the Belize Medical and Dental Association on the creation of a national continuing medical education accreditation system.

SECTION D: Other Ethical / Regulatory Oversight

D1. Who oversees research in this location? (IRB, local ethics committee, ministry of health, etc.)

The local ethics committee of Wenchi and Ankaase hospitals which are both overseen by the Methodist health system in Ghana.

D2. What is the process for obtaining approval from the entity/organization listed in D1?

Formal letters of requests outlining the research and US-based IRB approval are to be submitted to the Hospital Administrators for consideration by the ethics boards.

D3. Do you have approval from this entity/organization listed in D1?

YES. Submit a copy of the approval.

NO. Where are you in the process of obtaining this approval?

I am drafting the letter of request as I draft the UWM IRB protocol so that the two processes mirror each other.

SECTION E: Cultural / Political / Economic Considerations

E1. Thinking of your average participant, please rate the following:

	Compared to others in their country
Wealth	Average
Education	Advanced degree
Class / Social standing / Privileges	Above average standing / Some privileges
Freedom to make choices for themselves	Complete freedom / autonomy

E3. What other relevant cultural factors affect the conduct of your study, or the well-being of participants? How have these influenced your study design? What additional measures are in place to protect participants?

Ghana is an English-speaking country with a well-developed medical education system including medical schools, residencies and fellowships. Ghana produces a notable amount of clinical research. The participants do not have as much access to continuing medical education as their American counterparts. Because Ghana is active in their own medical research, participants are very familiar with the process and the significance of study outcomes.

SECTION F: Follow-up

F1. Will you share the study results with participants once the study is complete?

YES. How and when?

The Ghana College of Physicians and Surgeons hosts an annual continuing medical education meeting in September. Once the study is complete, I can present the aggregated themes from the research at that meeting.

NO. Why not?

IMPORTANT – Make sure all sections are complete and attach this document to your IRBManager web submission in the Attachment Page (Y1).

Appendix F: Informed Consent

Study title	AN INVESTIGATION OF HOW THE BELIEFS OF PRIMARY CARE PHYSICIANS IN GHANA INFLUENCE CLINICAL KNOWLEDGE TRANSLATION
Researcher[s]	Linda Caples

We're inviting you to participate in a research study. Participation is completely voluntary. If you agree to participate now, you can always change your mind later. There are no negative consequences, whatever you decide.

What is the purpose of this study?

This study aims to investigate PCP attitudes and beliefs concerning clinical practice guidelines as well as perceived implementation barriers and enablers.

What will I do?

You'll be in a focus group with about 5 other primary care physicians. A focus group is a discussion with a group of people about a certain topic. You'll discuss and share your experiences with the Ghanaian hypertension guidelines and the care of hypertensive patients. You'll also participate in an interview with the research to share your beliefs about the Ghanaian hypertension guidelines and your experiences caring for hypertensive patients.

Risks

Possible risks	How we're minimizing these risks
Some questions may remind you of a particularly challenging clinical case.	You can skip any questions you don't want to answer.
Others in the focus group sharing your responses	We ask all participants to keep everything said during the focus group confidential. However, we can't control what others say, so it is best not to share anything you don't want others to know.

Breach of confidentiality (your data being seen by someone who shouldn't have access to it)	<ul style="list-style-type: none"> • Data is anonymous. – or – All identifying information is removed and replaced with a pseudonym • We'll store all electronic data on a password-protected, encrypted computer. • We'll keep your identifying information separate from your research data, but we'll be able to link it to you by using a study ID. We will destroy this link after we finish collecting and analyzing the data.
---	--

There may be risks we don't know about yet. Throughout the study, we'll tell you if we learn anything that might affect your decision to participate.

Other Study Information

Possible benefits	<ul style="list-style-type: none"> • Knowledge gained from this study could be used to help improve clinical practice guidelines and make them more useful • CME organizers could use the knowledge gained from this study to improve the development of future courses in Ghana
Estimated number of participants	15
How long will it take?	60 minutes for the focus group and 60 minutes for the interview
Costs	No costs for participating in this study
Compensation	None
Future research	Your data won't be used or shared for any future research studies.
Recordings / Photographs	<p>We will record you. The recordings will be transcribed, coded and aggregated to identify overarching themes</p> <p>The recording of the interviews is optional. The recording of the focus group is necessary to this research. If you do not want to be recorded, you should not be in the focus group.</p>
Removal from the study	In order for our data to be useful, it is important that you participate in the one-on-one interview.

Confidentiality and Data Security

Where will data be stored?	On our non-networked computers that are password protected.
-----------------------------------	---

How long will it be kept?	May, 2019	
Who can see my data?	Why?	Type of data
The researchers	To analyze the data and conduct the study	Coded (names removed and labeled with a study ID)
The IRB (Institutional Review Board) at UWM The Office for Human Research Protections (OHRP) or other federal agencies	To ensure we're following laws and ethical guidelines	Coded (names removed and labeled with a study ID)
Anyone (public)	If we share our findings in publications or presentations	<ul style="list-style-type: none"> • Aggregate (grouped) data • If we quote you, we'll use a pseudonym (fake name)

Contact information:

For questions about the research	Linda Caples	01 414 828 9063 (WhatsApp) ldcaples@uwm.edu
For questions about your rights as a research participant	IRB (Institutional Review Board; provides ethics oversight)	414-229-3173 / irbinfo@uwm.edu
For complaints or problems	Linda Caples	01 414 828 9063 (WhatsApp) ldcaples@uwm.edu
	IRB	414-229-3173 / irbinfo@uwm.edu

Signatures

If you have had all your questions answered and would like to participate in this study, sign on the lines below. Remember, your participation is completely voluntary, and you're free to withdraw from the study at any time.

Name of Participant (print)

Signature of Participant

Date

Appendix G: Research Site Ethics Review Letters

METHODIST HOSPITAL - WENCHI (THE METHODIST CHURCH GHANA)		
BANKERS: G C B Bank, Wenchi National Investment Bank, Wenchi Your Ref:..... Our Ref: MHW/MF/25/	 E-mail: methowen@ymail.com Website: www.methowen.org	Post Office Box 55 Wenchi - B/A Ghana Thursday, July 26, 2018 Tel: 0202055760 0202055765

Mrs. Linda D. Caples, MBA
 PhD Candidate
 Department of Administrative Leadership
 School of Urban Education
 University of Wisconsin – Milwaukee
 Enderis 645
 P.O. Box 413
 Milwaukee, WI
 53201-0413

RE: How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?

Dear Mrs. Caples;

I am writing in regard to the research study proposal How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation – you submitted to Methodist Hospital, Wenchi, Ghana leadership for review and approval. You submitted your protocol for our ethics review as the Methodist Hospital system functions independently from Ghanaian academic Institutional Review Boards.

This study builds upon our continued partnership with Africa Partners Medical to strengthen healthcare in rural Ghana through continuing professional development and training.

Our leadership team conducted an ethics review of your study protocol. We have generated final approval of your study protocol dated July 26, 2018. We believe it constitutes minimum risk to study subjects which include our personnel and other healthcare personnel who regularly attend and are required to participate in continuing professional development by the Ghana Medical and Dental Council. We therefore, approve your protocol and this protocol will be considered invalid should any changes to this study protocol, statement of consent, or addition of other investigators or study staff not described in the current protocol submission.

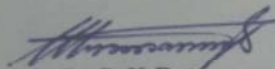
Please note:

1. Research approval is valid for one year only (August 1, 2018 – July 31, 2019). If however it is necessary to continue beyond the stated period, a written request with rationale should be made to Methodist Hospital, Wenchi leadership.
2. We will need regular updates or a progress report on the study outcomes and a final reported deposited at Methodist Hospital, Wenchi at the end of the study period (July 31, 2019). Additionally, Methodist Hospital, Wenchi should be acknowledged in any publications of this research
3. Any changes to this approved protocol must be reviewed and reapproved by Methodist Hospital, Wenchi leadership.

We know that you are awaiting approval from the University of Wisconsin – Milwaukee (UWM) Institutional Review Board and acknowledge that you will not initiate the research without formal written approval from UWM.

I would therefore like to take this opportunity to wish you well in your research

Sincerely;



Mr. B. C. K Botwe
Chief Executive Officer
Methodist Hospital, Wenchi
Box 55 Wenchi
BrongAhafo, Ghana, West Africa

Mr. B. C. K. BOTWE
CHIEF EXECUTIVE OFFICER
METHODIST HOSPITAL, WENCHI
P.O. BOX 55 WENCHI
BRONG AHAFO, GHANA



**METHODIST FAITH HEALING HOSPITAL
ANKAASE - KUMASI**
"MAKING LIFE WHOLE"



P.O. Box 1256

Kumasi, Ghana

Tel: 03220 9186 /0205888749

Email: methfaithhosp@gmail.com

Our Reference No: MFHH/HR/03

Your Ref No:

BANKERS:

Access Bank Adum Branch

Ecobank Gh. Ltd,

Jubilee House Adum

Juaben Rural Bank Aboaso Branch

Date: 26TH JULY, 2018

Mrs. Linda D. Caples, MBA
PhD Candidate
Department of Administrative Leadership
School of Urban Education
University of Wisconsin – Milwaukee
Enderis 645
P.O. Box 413
Milwaukee, WI
53201-0413

RE: How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation?

Dear Mrs. Caples;

I am writing in regard to the research study proposal How do the formal and informal beliefs of Ghanaian primary care physicians influence clinical knowledge translation – you submitted to Methodist Hospital, Ankaase, Ghana leadership for review and approval. You submitted your protocol for our ethics review as the Methodist Hospital system functions independently from Ghanaian academic Institutional Review Boards.

This study builds upon our continued partnership with Africa Partners Medical to strengthen healthcare in rural Ghana through continuing professional development and training.

Our leadership team conducted an ethics review of your study protocol. We have generated final approval of your study protocol dated July 26, 2018. We believe it constitutes minimum risk to study subjects which include our personnel and other healthcare personnel who regularly attend and are required to participate in continuing professional development by the Ghana Medical and Dental Council. We therefore, approve your protocol and this protocol will be considered invalid should any changes to

this study protocol, statement of consent, or addition of other investigators or study staff not described in the current protocol submission.

Please note:

1. Research approval is valid for one year only (August 1, 2018 – July 31, 2019). If however it is necessary to continue beyond the stated period, a written request with rationale should be made to Methodist Hospital, Ankaase leadership.
2. We will need regular updates or a progress report on the study outcomes and a final reported deposited at Methodist Hospital, Ankaase at the end of the study period (July 31, 2019). Additionally, Methodist Hospital, Ankaase should be acknowledged in any publications of this research
3. Any changes to this approved protocol must be reviewed and reapproved by Methodist Hospital, Ankaase leadership.

We know that you are awaiting approval from the University of Wisconsin – Milwaukee (UWM) Institutional Review Board and acknowledge that you will not initiate the research without formal written approval from UWM.

I would therefore like to take this opportunity to wish you well in your research

Sincerely,



Dr Agnes Amankwaa Arthur for
Mr. Joseph Atta Amankwaa
Chief Executive Officer
Methodist Faith Healing Hospital, Ankaase
P.O. Box 1256
Adum, Kumasi, West Africa

Appendix H: IRB Approval



Leah Stoiber
IRB Administrator
Institutional Review Board
Engelmann 270
P. O. Box 413
Milwaukee, WI 53201-0413
(414) 229-7455 phone
(414) 229-6729 fax

<http://www.irb.uwm.edu>
lstoiber@uwm.edu

New Study - Notice of IRB Exempt Status

Date: August 10, 2018

To: Barbara Daley, PhD
Dept: Urban Education

CC: Linda Caples

IRB#: 19.033

Title: AN INVESTIGATION OF HOW THE BELIEFS OF PRIMARY CARE PHYSICIANS IN GHANA
INFLUENCE CLINICAL KNOWLEDGE TRANSLATION

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been granted Exempt Status under **Category 2** as governed by 45 CFR 46.101(b).

This protocol has been approved as exempt for three years and IRB approval will expire on **August 9, 2021**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, please respond to the IRB's status request that will be sent by email approximately two weeks before the expiration date. If the study is closed or completed before the IRB expiration date, you may notify the IRB by sending an email to irbinfo@uwm.edu with the study number and the status, so we can keep our study records accurate.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The principal investigator is responsible for adhering to the policies and guidelines set forth by the UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB any adverse events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation, and best wishes for a successful project.

Respectfully,

Leah Stoiber
IRB Administrator

Appendix I: UWM IRB Modification-Amendment

IRBManager Protocol Form

NOTE: If you are unsure if your study requires IRB approval, please review the UWM IRB Determination Form.

Instructions: Each Section must be completed unless directed otherwise. Incomplete forms will delay the IRB review process and may be returned to you. Enter your information in the **colored boxes** or place an **“X”** in front of the appropriate response(s). If the question does not apply, write **“N/A.”**

SECTION A: Title

A1. Full Study Title:

AN INVESTIGATION OF HOW THE BELIEFS OF PRIMARY CARE PHYSICIANS IN GHANA INFLUENCE CLINICAL KNOWLEDGE TRANSLATION

SECTION B: Study Duration

B1. What is the expected start date? *Data collection, screening, recruitment, enrollment, or consenting activities may not begin until IRB approval has been granted. Format: 07/31/2011*

September, 2018

B2. What is the expected end date? *Expected end date should take into account data analysis, queries, and paper write-up. Format: 07/05/2014*

May, 2019

SECTION C: Summary

C1. Write a brief descriptive summary of this study in Layman Terms (non-technical language):

This study utilizes the theory of planned behavior to investigate influences of beliefs on clinical knowledge translation by primary care physicians as a component of improving health outcomes for patients living with hypertension in Ghana

C2. Describe the purpose/objective and the significance of the research:

This study aims to investigate primary care physicians' attitudes and beliefs concerning clinical practice guidelines as well as perceived implementation barriers and enablers.

C3. Cite the most relevant literature pertaining to the proposed research:

De-Graft Aikins, A. (2007). Ghana's neglected chronic disease epidemic: A developmental challenge. *Ghana Medical Journal*, 41(4), 154-9

Dzudie, A., Rayner, B., Ojji, D., Schutte, A. E., Twagirumukiza, M., Damasceno, A., . . . Mayosi, B. (2017). Roadmap to achieve 25% hypertension control in Africa by 2025. *Global Heart*, doi:10.1016/j.ghheart.2017.06.001

Essuman, A., Lawson, H., Nortey, D., Gyakobo, M., Ofori-Amankwah, G., Ndanu, T. A., & Gold, K. J. (2017). Five years of family medicine undergraduate education in Ghana: A wake-up call! *Ghana Medical Journal*, 51(2), 50

SECTION D: Subject Population

Section Notes...

- D1. If this study involves analysis of de-identified data only (i.e., no human subject interaction), IRB submission/review may not be necessary. **Please review the [UWM IRB Determination Form](#) for more details.**

D1. Identify any population(s) that you will be specifically targeting for the study. Check **all that apply: (Place an "X" in the column next to the name of the special population.)**

Existing Dataset(s)		Institutionalized/ Nursing home residents recruited in the nursing home
UWM Students of PI or study staff		Diagnosable Psychological Disorder/Psychiatrically impaired
UWM Students (but not of PI or study staff)		Decisionally/Cognitively Impaired
Non-UWM students to be recruited in their educational setting, i.e. in class or at school		Economically/Educationally Disadvantaged
UWM Staff or Faculty		Prisoners
Pregnant Women/Neonates	X	International Subjects (residing outside of the US)
Minors under 18 and ARE NOT wards of the State		Non-English Speaking
Minors under 18 and ARE wards of the State		Terminally ill
Other (Please identify):		

D2. Describe the subject group and enter the total number to be enrolled for each group. For example: teachers-50, students-200, parents-25, student control-30, student experimental-30, medical charts-500, dataset of 1500, etc. Then enter the total number of subjects below. Be sure to account for expected drop outs. For example, if you need 100 subjects to complete the entire study, but you expect 5 people will enroll but "drop out" of the study, please enter 105 (not 100).

Describe subject group:	Number:
Primary Care Physicians who live and practice medicine full time in the country of Ghana	15 to 30

TOTAL # OF SUBJECTS:	15 minimum to 30 maximum
TOTAL # OF SUBJECTS (If UWM is a collaborating site for a multi institutional project):	

D3. For each subject group, list any major inclusion and exclusion criteria (e.g., age, gender, health status/condition, ethnicity, location, English speaking, etc.) and state the justification for the inclusion and exclusion criteria:

Participants must be primary care physicians who include Family Medicine physicians and General Internal Medicine physicians who live and practice medicine in the Republic of Ghana, West Africa on a full time basis. Other healthcare professionals and other medical specialists are excluded from this study. The focus of this study is on the beliefs of primary care physicians only.

SECTION E: Study Activities: Recruitment, Informed Consent, and Data Collection
<p>Section Notes...</p> <ul style="list-style-type: none"> Reminder, all recruitment materials, consent forms, data collection instruments, etc. should be attached for IRB review. The IRB welcomes the use of flowcharts and tables in the consent form for complex/ multiple study activities.

In the table below, chronologically describe all study activities where human subjects are involved.

- In **column A**, give the activity a short name. Please note that Recruitment, Screening, and consenting will be activities for almost all studies. Other activities may include: Obtaining Dataset, Records Review, Interview, Online Survey, Lab Visit 1, 4 Week Follow-Up, Debriefing, etc.
- In **column B**, describe who will be conducting the study activity and his/her training and/or qualifications to complete the activity. You may use a title (i.e. Research Assistant) rather than a specific name, but training/qualifications must still be described.
- In **column C**, describe in greater detail the activities (recruitment, screening, consent, surveys, audiotaped interviews, tasks, etc.) research participants will be engaged in. Address **where**, **how long**, and **when** each activity takes place.
- In **column D**, describe any possible risks (e.g., physical, psychological, social, economic, legal, etc.) the subject may *reasonably* encounter. Describe the **safeguards** that will be put into place to minimize possible risks (e.g., interviews are in a private location, data is anonymous, assigning pseudonyms, where data is stored, coded data, etc.) and what happens if the participant gets hurt or upset (e.g., referred to Norris Health Center, PI will stop the interview and assess, given referral, etc.).

A. Activity Name:	B. Person(s) Conducting Activity	C. Activity Description (Please describe any forms used):	D. Activity Risks and Safeguards:
Recruitment	David Frempong	Creates flyers and organizes logistics for a continuing medical education course which will serve as the basis for recruitment. Recruitment begins in August, 2018 and consists of flyers at clinics and hospitals and large banners at hospitals.	Minimal risk as it is usual practice for Ghanaian physicians to attend continuing medical education courses. Course advertisements will include information about the study noting that participation in the study is voluntary.
Recruitment	Linda Caples	Send email invitations to perspective participants. Email addresses will be acquired	Minimal risk as both LinkedIn and

		via the Co-PI's personal LinkedIn and WhatsApp accounts as she (Linda Caples) is personally connected to a number of primary care physicians in Ghana.	Whats App are common platforms for collaboration and invitations will be one on one.
Screening	Linda Caples	At the course registration desk, identify the participants who would qualify for the study. Review the study with them and ask if they are willing to participate.	Minimal risk as the only screening question is asking whether or not the participant is a primary care physician. This is commonly shared knowledge as the question is about their profession.
Obtaining Consent	Linda Caples	At the course registration desk, I will have consent forms available for those who agree to participate to complete and return to me on-site.	Minimal risk as the participants are highly educated and literate in English, as English is the national language of Ghana.
Hypertension Course	Michael Opong-Kusi, MD Linda Caples	Dr Opong-Kusi will instruct the course on hypertension in September of 2018. One course will be in Wenchi, Ghana and the other at Ankaase, Ghana. Linda Caples will observe the course and take notes.	Minimal risk as it is usual practice for Ghanaian physicians to attend continuing medical education courses. The course will be recorded for those who are not able to attend in person. This is also a usual practice in Ghana.
Focus Group	Linda Caples	<p>Immediately following the course, a focus group of primary care physicians only will be held for approximately 60-90 minutes.</p> <p>Data will be stored on a hand-held recording device which will be stored securely in a locked cabinet in my home. Recordings will be erased at the conclusion of the research project.</p> <p>The focus group recordings will be transcribed using Dragon software and pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded.</p> <p>In order to foster interaction, and deep conversation, focus groups will not be held if a minimum of 5 participants cannot be attained.</p>	<p>There is some risk as participants will be talking amongst their peers. The focus group will be recorded as well which may make some participants uncomfortable. At the start of the session, I will repeat the purpose of the study, remind participants that the session is being recorded, and remind them that they are welcome to leave at any time they may wish.</p>

Interviews	Linda Caples	<p>In November, 2018, one-on-one interviews using Zoom or WhatsApp as a backup will be conducted. The interviews will be approximately 60 minutes each and calls will be made from the recording rooms of the UWM Library to provide privacy. Data will be stored on a hand-held recording device which will be stored securely in a locked cabinet in my home. Recordings will be erased at the conclusion of the research project. Recordings will be transcribed using Dragon software and pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded.</p>	<p>Participants may share experiences about taking care of patients that may invoke feelings of frustration, anger or sadness. I will remind participants at the beginning of the interview, that participation is voluntary and anonymous. They are welcome to end the interview at any time. If I feel a participant is having an emotional response, I will pause the interview and ask if they would like to conclude or if they need a moment before we move on. All electronic data derived from the interviews will be stored on my personal home computer that is password protected.</p>
Data Analysis	Linda Caples	<p>In October, 2018, I will begin coding the focus group data using line by line coding method and CMap tools which is password protected. In November and December, 2018, the coding of interview data will occur.</p> <p>Peer debriefing by the course instructor and a Family Medicine physician will occur on the aggregated (coded) data to confirm the voice of the participants is clearly represented.</p>	<p>No known risk to participants as pseudonyms for participants will be used. The real names will be kept separately and the list will be destroyed once the research has concluded. All electronic data derived from the interviews will be stored on my personal home computer that is password protected.</p>
Findings & Conclusion	Linda Caples	<p>In November and December, 2018, I will write up the findings and conclusion of the study</p>	

E2. Explain how the data will be analyzed or studied (i.e. quantitatively or qualitatively) and how the data will be reported (i.e. aggregated, anonymously, pseudonyms for participants, etc.):

This is a qualitative dissertation that will report data in aggregated or with the use of pseudonyms.

SECTION F: Data Security and Confidentiality

Section Notes...

- Please read the [IRB Guidance Document on Data Confidentiality](#) for more details and recommendations about data security and confidentiality.

F1. Explain how study data/responses will be stored in relation to any identifying information (name, birthdate, address, IP address, etc.)? Check all that apply.

- Identifiable** - Identifiers are collected and stored with study data.
- Coded** - Identifiers are collected and stored separately from study data, but a key exists to link data to identifiable information.
- De-identified** - Identifiers are collected and stored separately from study data without the possibility of linking to data.
- Anonymous** - No identifying information is collected.

If more than one method is used, explain which method is used for which data.

F2. Will any recordings (audio/video/photos) be done as part of the study?

- Yes
- No [SKIP THIS SECTION]

If yes, explain what activities will be recorded and what recording method(s) will be used. Will the recordings be used in publications or presentations?

The focus group will be audio recorded on a hand-held device. The interviews will be conducted using Zoom or WhatsApp and audio recording on the same hand-held device. The recordings will be transcribed and analyzed. They will not appear in publications or presentations.

F3. In the table below, describe the data storage and security measures in place to prevent a breach of confidentiality.

<ul style="list-style-type: none"> In column A, clarify the type of data. Examples may include screening data, paper questionnaires, online survey responses, EMG data, audio recordings, interview transcripts, subject contact information, key linking Study ID to subject identifiers, etc. In column B, describe the storage location. Examples may include an office in Enderis 750, file cabinet in ENG 270, a laptop computer, desktop computer in GAR 420, Qualtrics servers, etc. In column C, describe the security measures in place for each storage location to protect against a breach of confidentiality. Examples may include a locked office, encrypted devices, coded data, non-networked computer with password protection, etc. In column D, clarify who will have access to the data. In column E, explain when or if data will be discarded. 				
A. Type of Data	B. Storage Location	C. Security Measures	D. Who will have access	E. Estimated

				date of disposal
Audio recordings	Hand-held audio recording device (while in Ghana) and then transferred to Personal home computer (in US)	Non-networked hand-held audio recording device. Non-networked computer that is Password protected	Linda Caples	Deleted from hand-held audio recording device once transferred to personal home computer. Disposed from computer by May 2019
Subject Contact Information	UWM Qualtrics form	Password Protected	Linda Caples	May 2019
Video recording (Zoom)	Hand-held audio recording device (while recording) and then transferred to Personal home computer (in US)	Non-networked hand-held audio recording device. Non-networked computer that is Password protected	Linda Caples	Deleted from hand-held audio recording device once transferred to personal home computer. Disposed from computer by May 2019
Interview and Focus Group Transcripts	Personal home computer	Non-networked computer that is Password protected	Linda Caples	May 2019

F4. Will data be retained for uses beyond this study? If so, please explain and notify participants in the consent form.

No data will be retained beyond this study.

SECTION G: Benefits and Risk/Benefit Analysis
Section Notes... <ul style="list-style-type: none"> Do not include Incentives/ Compensations in this section.

G1. Describe any benefits to the individual participants. If there are no anticipated benefits to the subject directly, state so. Describe potential benefits to society (i.e., further knowledge to the area of study) or a specific group of individuals (i.e., teachers, foster children).

There are no known direct benefits to individual participants. For Ghana, the Ministry of Health and medical leadership may use the information to revise clinical practice guidelines and continuing medical education providers in Ghana can use the information to improve the quality of the courses – both benefits have the ultimate goal of improving the care of patients living with hypertension.

G2. Risks to research participants should be justified by the anticipated benefits to the participants or society. Provide your assessment of how the anticipated risks to participants and steps taken to minimize these risks (as described in Section E), balance against anticipated benefits to the individual or to society.

Participation in continuing medical education is a standard practice for Ghanaian physicians and required for licensure to practice medicine. It is the culture of medical practice for physicians to discuss their clinical experiences. However, sometimes those experiences can be traumatic. Therefore, participants who have a strong emotional response during the focus group and/or interviews may stop the session at any time. They can choose to rejoin the conversation or end the conversation if that would be more comfortable. The end goal is to improve the care of patients by listening to the voice of physicians.

SECTION H: Subject Incentives/ Compensations

Section Notes...

- H2 & H3. The IRB recognizes the potential for undue influence and coercion when extra credit is offered. The UWM IRB, as also recommended by OHRP and APA Code of Ethics, agrees when extra credit is offered or required, prospective subjects must be given the choice of an equitable, non-research alternative. The extra credit value and the non-research alternative must be described in the recruitment material and the consent form.
- H4. If you intend to submit to Accounts Payable for reimbursement purposes make sure you understand the UWM “Payments to Research Subjects” Procedure 2.4.6 and what each level of payment confidentiality means ([click here for additional information](#)).

H1. Does this study involve incentives or compensation to the subjects? For example cash, class extra credit, gift cards, or items.

- Yes
 No [SKIP THIS SECTION]

H2. Explain what (a) the item is, (b) the amount or approximate value of the item, and (c) when it will be given. For extra credit, state the number of credit hours and/or points. (e.g., \$5 after completing each survey, subject will receive [item] even if they do not complete the procedure, extra credit will be award at the end of the semester):

[Empty text box for H2 response]

H3. If extra credit is offered as compensation/incentive, please describe the specific alternative activity which will be offered. The alternative activity should be similar in the amount of time involved to complete and worth the same number of extra credit points/hours. Other research studies can be offered as additional alternatives, but a non-research alternative is required.

[Empty text box for H3 response]

H4. If cash or gift cards, select the appropriate confidentiality level for payments (see section notes):
 Level 1 indicates that confidentiality of the subjects is not a serious issue, e.g., providing a social security number or other identifying information for payment would not pose a serious risk to subjects.

- For payments over \$50, choosing Level 1 requires the researcher to collect and maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 1 is selected, a formal notice is not issued by the IRB and the Account Payable assumes Level 1.
- Level 1 payment information will be retained in the extramural account folder at UWM/Research Services and attached to the voucher in Accounts Payable. These are public documents, potentially open to public review.

Level 2 indicates that confidentiality is an issue, but is not paramount to the study, e.g., the participant will be involved in a study researching sensitive, yet not illegal issues.

- Choosing a Level 2 requires the researcher to maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 2 is selected, a formal notice will be issued by the IRB.
- Level 2 payment information, including the names, are attached to the PIR and become part of the voucher in Accounts Payable. The records retained by Accounts Payable are not considered public record.

Level 3 indicates that confidentiality of the subjects must be guaranteed. In this category, identifying information such as a social security number would put a subject at increased risk.

- Choosing a Level 3 requires the researcher to maintain a record of the following: research subject's name and corresponding coded identification. This will be the only record of payee names, and it will stay in the control of the PI.
- Payments are made to the research subjects by either personal check or cash. Gift cards are considered cash.
- If a cash payment is made, the PI must obtain signed receipts.
- If the total payment to an individual subject is over \$600 per calendar year, Level 3 cannot be selected.

If Confidentiality Level 2 or 3 is selected, please provide justification.

SECTION I: Deception/ Incomplete Disclosure (INSERT "NA" IF NOT APPLICABLE)

Section Notes...

- If you cannot adequately state the true purpose of the study to the subject in the informed consent, deception/ incomplete disclosure is involved.

I1. Describe (a) what information will be withheld from the subject (b) why such deception/ incomplete disclosure is necessary, and (c) when the subjects will be debriefed about the deception/ incomplete disclosure.

N/A

IMPORTANT – Make sure all sections are complete and attach this document to your IRBManager web submission in the Attachment Page (Y1).

Appendix J: IRB Medication-Amendment Approval



Melody Harries
IRB Administrator
Institutional Review Board
Engelmann 270
P. O. Box 413
Milwaukee, WI 53201-0413
(414) 229-3182 phone
(414) 229-6729 fax

Modification/Amendment Notice of IRB Exempt Status

<http://www.irb.uwm.edu>
harries@uwm.edu

Date: October 12, 2018

To: Barbara Daley, PhD
Dept: Urban Education

CC: Linda Caples

IRB#: 19.033

Title: AN INVESTIGATION OF HOW THE BELIEFS OF PRIMARY CARE PHYSICIANS IN GHANA INFLUENCE CLINICAL KNOWLEDGE TRANSLATION

After review of your proposed changes to the research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol still meets the criteria for Exempt Status under **Category 2** as governed by 45 CFR 46.101 subpart b, and your protocol has received modification/amendment approval for:

- Adding recruitment method
- Clarifying number of participants required to conduct focus groups

This protocol has been approved as exempt for three years and IRB approval will expire on **August 9, 2021**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, please respond to the IRB's status request that will be sent by email approximately two weeks before the expiration date. If the study is closed or completed before the IRB expiration date, you may notify the IRB by sending an email to irbinfo@uwm.edu with the study number and the status, so we can keep our study records accurate.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The principal investigator is responsible for adhering to the policies and guidelines set forth by the UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB any adverse events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project.

Respectfully,

Melody Harries
IRB Administrator

CURRICULUM VITAE

Linda D. Caples

Place of birth: Milwaukee, WI

Education

B.A., Butler University, Indianapolis, IN, May 1997
Major: Business Administration. Minor: Marketing

M.B.A. Cardinal Stritch University, Milwaukee, WI, December 2002
Major: Business Administration

Dissertation Title: An Investigation into Ghanaian Primary Care Physician's Beliefs and Their Influence on Clinical Knowledge Translation

Memberships

- Pi Lambda Theta
- Society of Academic Continuing Medical Education

Professional Activities

- Book Review Editor – Journal of Continuing Education in the Health Professions
- Chair, Membership Committee - The Society of Academic Continuing Medical Education
- Planning Committee Member – 2015 & 2016 Knowledge FIESTA, annual meeting of the Ghana College of Physicians & Surgeons

National Presentations/Abstracts

- "What Kind of Information Do We Need From Each Other?" Panelist. American Board of Medical Specialties QI Forum on Organizational Quality Improvement (May, 2015)
- "Global CME" Society for Academic Continuing Medical Education Spring Meeting (April, 2015)
- "Using Technology to Support CME/CPD: Learning Management Systems". Panelist. Society for Academic Continuing Medical Education Spring Meeting (April, 2015)

International Presentations/Abstracts

- "Benefits and Disadvantages of CME and Accreditation." The Belize Medical and Dental Association XXXVI National Congress (October, 2017)
- "Effectiveness of CME in Ghana: An educational outcomes report of the Medical Knowledge Fiesta" Ghana College of Physicians & Surgeons (September, 2016)
- "Healthcare Leadership" Ghana College of Physicians & Surgeons – Medical Knowledge Fiesta 2015 (September, 2015)
- "Inter-Professional Education: Learning Together" Ghana College of Physicians & Surgeons – Medical Knowledge Fiesta 2015 (September, 2015)